STEEL

PRODUCTION

PROCESSING

DISTRIBUTION

USE

EDITORIAL STAFF

E. L. SHANER
EDITOR

ASSOCIATE EDITORS

E. C. BARRINGER — E. F. ROSS
A. J. HAIN — J. D KNOX
G. H. MANLOVE — A. H. ALLEN
E. A. FRANCE JR. — GUY HUBBARD

New York
E. C. KREUTZBERG — B. K. PRICE
L. E. BROWNE

Pittsburgh
W. G. GUDE

Chicago
F. B. PLETCHER

Washington
L. M. LAMM

London
VINCENT DELPORT

BUSINESS STAFF

GEORGE O. HAYS
BUSINESS MANAGER

New York
E. C. KREUTZBERG — E. W. KREUTZBERG

Pittsburgh
S. H. JASPER

Chicago
L. C. PELOTT — C. A. WARDLEY

Cleveland
JOHN HENRY — R. C. JAENKE

CONTENTS

April 11, 1932

THE WEEK IN STEEL 15

Expect Better Finish Than Opening of Lake Ore Season 17
Soviet Iron Goal 22,000,000 Tons 18
Ingot Rate Falls in March, but Not to December Low 20
Pig Iron Erases Quarter Century Gain 21
Industrial Men in the Day's News 22
Obituary 23
Mirrors of Motordom 24
Here and There in Industry 25

EDITORIAL—Watch Your Congressman! 26
THE BUSINESS TREND 27

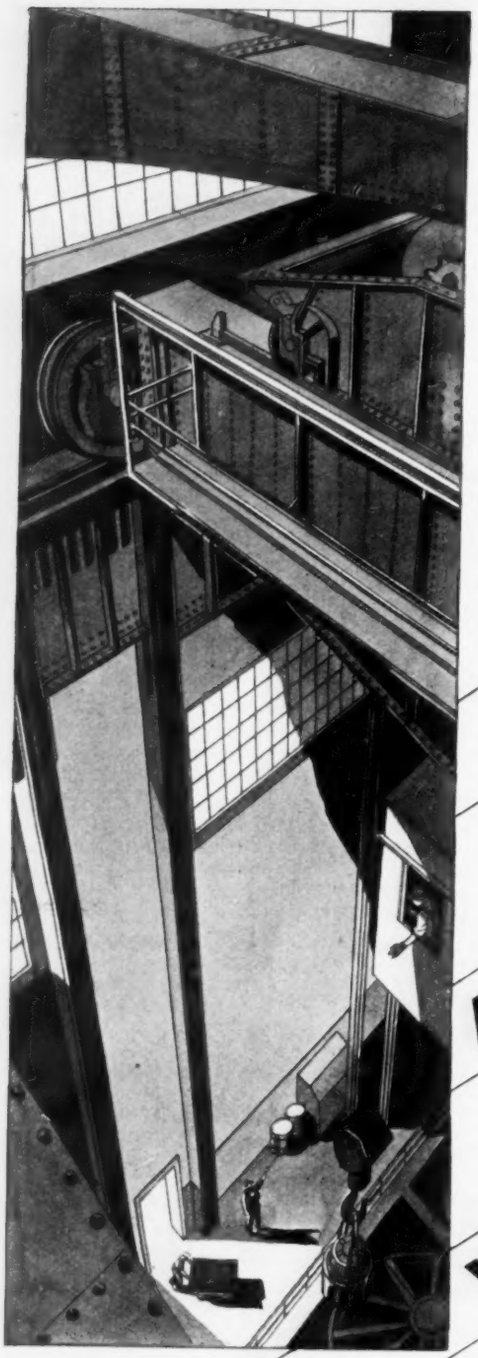
All-Steel Auto Bodies Are Flash Welded 31
Wage Plan Involves Unit of Labor Measurement 34
All-Steel Construction Used in Power Barge 35
Develops Revolving Electric Arc Saw To Cut Steel 36
Making the Most of Steel 38
Progress in Steelmaking 40
Scanning the Technology of Steel 42
New Equipment 43

MARKET REPORTS AND PRICES 47-65
CONSTRUCTION AND ENTERPRISE 66
NEW TRADE PUBLICATIONS 66
WHERE-TO-BUY DEPARTMENT 69
ADVERTISERS' INDEX 85

STEEL is published every Monday by PENTON PUBLISHING CO., Penton Building, Cleveland, O. C. J. STARK, President; J. D. PEASE, Vice President; F. V. COLE, Secretary. Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers Association. Branch Offices: New York, 220 Broadway; Chicago, Peoples Gas building; Pittsburgh, Oliver building; San Francisco, Alto building; Washington, National Press building; Cincinnati, Schmidt building; London, Caxton House, Westminster, S. W. 1; Berlin, Lichterfeld-West, Dahlmerstrasse 64a, Germany. Subscription in the United States, Cuba and Mexico $6 per year; in Canada $8.60; in Great Britain and European countries £2:8s.

Entered as second class matter at post office at Cleveland under the Act of March 3, 1879.

Copyright 1932 by the Penton Publishing Co.



·R·T·
A NEW STANDARD
OF CRANE WHEEL SERVICE

THE eighteenth and twentieth letters of the alphabet have taken on a special significance for users of crane wheels. Stamped on Carnegie Wrought Steel Crane Wheels, the initials "R T" mean Rim Toughened. They indicate the additional refinement of heat treatment, the process of which produces a wheel with an especially tough rim and with high physical properties . . . a wheel capable of withstanding heavy loads and which is highly resistant to wear . . . a wheel that has created a higher standard of crane wheel service.

Specify Carnegie Rim Toughened Crane Wheels on your new equipment. Use them for replacements on your present equipment. You will find cost of upkeep and operation materially reduced. While these wheels are generally furnished with tread and flange finish machined and with hub rough bored, they may, if desired, be furnished rough machined and rough bored only. Send for booklet "Carnegie Rim Toughened Wrought Steel Wheels." Our engineers are also at your service.

CARNEGIE STEEL COMPANY · PITTSBURGH, PA.

Subsidiary of United States Steel Corporation 170

CARNEGIE CRANE WHEELS

Volume 90 Number 15

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

ONE billion dollars it has cost automobile owners for Henry Ford to bring out his eight! Boon this model may be to the modest purse, but for the entire industry—and especially the used-car market—it has established a new standard of value. One million cars in the luxury class and 5,000,000 worth $100 or less may be immune to the Ford influence, but the remaining 15,000,000 cars now on the highways have been depreciated at least $75 each by this new Ford (p. 24). And a billion dollars equals the combined capitalization of the Bethlehem and Republic Steel Corps.; it would have bought every ton of finished steel produced in 1930. Even deflation Henry Ford accomplishes on a brobdingnagian scale.

Forgive Deflation if Business Improves

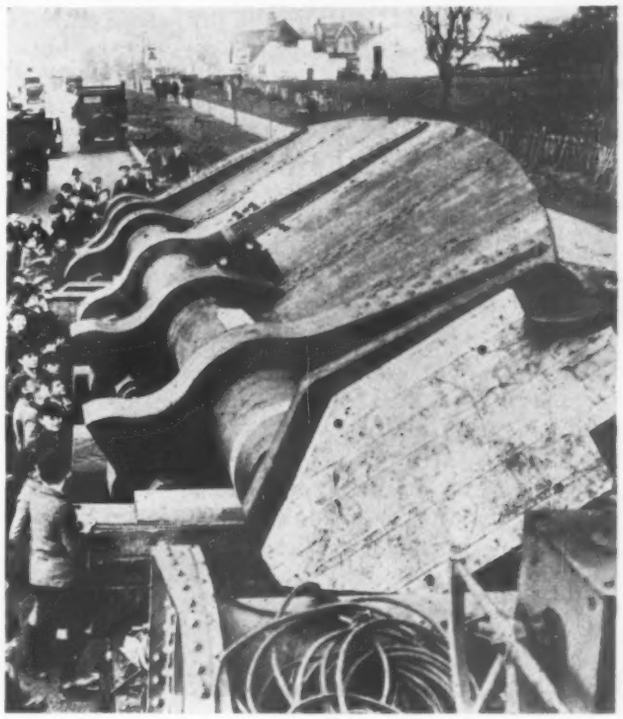
Realized slowly, as individual cars are traded in, this shrinkage will not seem so poignant, provided the stimulus to general business accruing from the retail sales drive of Ford and other automobile manufacturers is consistent with the potentialities. Nearly 15,000,000 persons, it is claimed, were clocked at the General Motors shows; cash deposits are up on over 300,000 new Fords. Thus the "daily expectation" which has described Ford and other manufacturers' requirements for steel should shortly become a reality. In fact, the first lift to steelmaking operations (p. 47) traceable to automotive demand is expected this week.

Change Slight, but in Right Direction

Steel producers are stark realists, conceding that bookings the past ten days have been as light as at any time this year, yet there is an earnest seeking for sunshine in the market news. Impelled by 8400 tons for a bridge at Troy, N. Y., structural steel awards last week (p. 52) went beyond the weekly average for the year to date. . . . Ferroalloys, frequently sharing barometric honors with scrap (p. 57), are in better demand. . . . In Canada a blast furnace stack at Sault Ste. Marie has been lighted (p. 57) and more pig iron is moving to dominion foundries. Lower lake foundries on automotive work are expanding their releases.

Ingots Bounce Off Secondary Bottom

Following encouraging gains in January and February, open-hearth and bessemer steel ingot production turned down in March (p. 20), nevertheless a small part of this improvement was retained. From December to March the



Acme Photo

Fifty-five tons is the weight of the rudder of the Cunard liner Berengaria, being trucked from Southampton to Darlington, England, because railroad clearances were inadequate

Wide World Photo

Workers' houses in Holland, showing the extent modern architects aided by structural steel can improve housing conditions, now being exhibited at the art museum in Philadelphia

daily ingot rate, in tons, has fluctuated thus: 50,092—56,203—58,382—52,253, and if even a small portion of the expected automobile tonnage eventuates, April should initiate another moderate rise over last month's secondary bottom.

Look to Last-Half Ore Movement

To both the movement in the first half of the season and the mountain of 33,500,000 tons of iron ore at blast furnaces and on lower lake docks the ore interests close their eyes (p. 17), but in the last half of the season they profess to see a ray of hope. Possibly disturbed by the meager season ahead, upper lake railroads would absorb the entire surcharge of 6 cents a ton recently allowed by the interstate commerce commission, to the dismay of interior furnaces fearing lower lake carriers might do likewise. A revise of March pig iron production statistics discloses (p. 20) a slightly better situation than last week's estimate.

Battleship Scrap Goes to Manchuria

The sluggishness in this interior ore market contrasts with the activity in the coast markets. From Seattle the Japanese are taking 8000 tons of battleship scrap (p. 65) for Manchurian destinations, plus smaller lots making a total of 10,000 tons moving from the Pacific Northwest. . . . On the Atlantic coast, a bunching of cargoes put over 11,000 tons of Dutch pig iron into Philadelphia last week (p. 57.) . . . Foreign steel also has assumed alarming proportions in the eastern warehouse markets.

Weld There, but Try To Detect It

Flash welding plays an important part in fabricating monopiece all-steel automobile bodies. Development of large presses, stamping out a complete body side, necessitated a method for supplying larger sheets, which flash welding smaller sheets supplied (p. 31). When the bead is sheared off and the joint ground smooth it is impossible to detect the weld. . . . Welded steel pipe, strong enough to withstand pile driver blows without failure, is being used in construction work (p. 38). The pipe driven, the earthen core is softened with water and blown out with compressed air, following which the pipe is filled with concrete.

Tough Steel Yields to Electric Arc

A saw that employs an electric arc instead of teeth successfully cuts alloy steel (p. 36). A wheel revolving at high speed constitutes one electrode; the work is the other, and between the two passes a high-amperage low-voltage arc. One advantage is that the wheel, revolving, continuously presents a new and cool surface to the work. . . . The operator of such a saw could well be compensated by a labor measuring system like that adopted recently at an eastern steelworks (p. 34). A unit has been devised which represents the amount of work a man can accomplish while engaged at normal speed and taking normal relaxation. For work in excess of the unit amount a premium is paid.

Soviet Crows Over Capitalistic Engineers

Driving oil wells beneath the surfaces of lakes and oceans taxes the ingenuity of drilling and power equipment manufacturers. Recently an all-steel diesel-powered barge was constructed (p. 35) for supplying power to offshore operations. Twin 485-horsepower generating plants provide ample power for drilling 6000-foot wells. . . . Soviet engineers yield no honors in ingenuity to the rest of the world. An improved skip hoist for blast furnaces and production of stainless steels in the open-hearth furnace (p. 18) are cited as recent Russian accomplishments. A second 5-year plan has as one objective an output of 22,000,000 tons of pig iron in 1937.

Expect Better Finish than Opening of Lake Ore Season

TAXES on Minnesota iron ore will have a greater influence on shipments this month, at the opening of Great Lakes navigation, than will actual demand for iron ore. Taxes are assessed as of May 1, and ore in stockpile is considered personal property, the tax being approximately 5 cents a ton. Some shipments will be made this month to avoid this, but even so they will fall considerably short of the April average.

This tax in itself may not appear excessive, but it is only a small part of the total which this year will run well above 60 cents a ton, when cost of production also will be higher than at any other time in recent years. On top of this tax, the ore producers are confronted with the 6-cent per ton freight surcharge, authorized last December by the interstate commerce commission, on ore, coal and iron and steel products.

Debate Surchage Payment

Sellers pay the freight on ore from mines to upper lake docks, while buyers pay for the haulage from lower lake ports to interior furnaces. The commerce commission did not make it clear as to how the surcharge on ore should be apportioned, and northern and eastern carriers have been debating it ever since.

Northern roads insist upon receiving the entire surcharge, while eastern carriers have proposed an equal division. Failing a compromise, the eastern carriers say they, too, will impose a 6-cent surcharge.

A committee representing interior iron and steel companies has been in conference with railroad representatives. Already at a freight disadvantage in iron ore, these companies hope to avoid a full 6-cent surcharge, if a similar charge also is to be imposed on the ore from mines to upper lake docks. An agreement by the railroads, satisfactory to themselves and the ore interests, is expected shortly.

Tax Appears Unjustified

Mine stocks were increased last year far beyond requirements as a consequence of operators' determination to keep miners employed, in a year when shipments were only 40 per cent of normal. The tax on these stocks now appears as an unjustified penalty, but cannot be avoided. The total unit tax on ore produced increases as output decreases. As an extreme, though actual, example: The tax on one mine that was completely idle for an entire year was $250,000.

The freight surcharge, excessive taxes, certainty that unit production costs will be relatively higher this year than last, and the knowledge that price reduction will not stimulate demand, are reasons why some leading operators now say there will be no change in ore prices this year. A firm attitude is noted, though the Ford Motor Co., largest individual buyer, has not yet appeared with its inquiry.

See Late Season

Operators are disposed to take a more cheerful view of the outlook for the season, though it is now fully recognized that shipments will be lower than last year, when they were 23,500,000 tons. It is apparent to them the season will start unusually late, and the movement will be extremely slow for several months. But, in their opinion, it is almost certain to build up as the year advances.

To illustrate their position: Stocks at lower lake ports and furnaces are the largest for this time in history; on May 1 they will approximate 33,500,000, in contrast with a 20-year average of 20,000,000 tons. Last May 1 they were 28,700,000; and May 1, 1921, 28,200,000 tons. Many consumers do not want to receive any ore this year; are seeking compromises and adjustments on long-term contracts which bind them to take specific amounts.

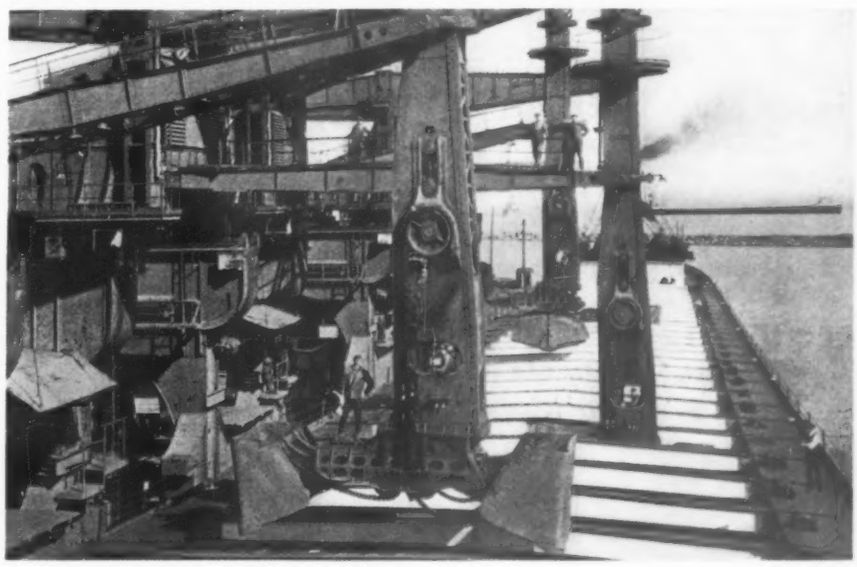
Coal demand in the upper lakes region generally provides some incentive for April shipping, the vessels returning with ore. But due to mild weather, coal stocks in the North are reported far above normal. The first rustle of spring, therefore, finds only two coal and ore freighters moving on the Great Lakes—the Inland Steel Co., Chicago, taking coal in two vessels from Lake Erie ports.

The usual bustle in getting the boats ready is lacking; many vessel operators have no plans or schedules. Pittsburgh Steamship Co., Steel corporation subsidiary, will not put out a boat this month, and will not feel the impulse for shipping until the latter part of May. It is understood that it does not now contemplate putting into service more than 43 units of its fleet of 86 this year.

April Movement Slack

Few vessels will be operated by the independents before May 1, and it appears April ore shipments will fall below the 175,900 tons of April last year, and the 176,200 tons in the month in 1921. Interstate Steamship Co., a Jones & Laughlin Steel Corp. subsidiary, does not plan to use any of its four vessels this season.

A survey of the iron and steel industry's vessel departments indicates that not more than 75 freighters, of a fleet numbering 332, will be in



Photo, Youngstown Sheet & Tube Co.

SIXTY-PER CENT OF ALL LAKE SUPERIOR IRON ORE stops at lakefront furnaces; 40 per cent proceeds on to interior furnaces which are adamant against the 6-cent a ton freight surcharge being collected by both upper and lower lake carriers. Freight rates, taxes, how to keep men employed—these are the problems of today, not the handling of ore, which already is highly mechanized, as evidenced by the Hulett unloaders depicted above at work on the steamer YOUNGSTOWN *of the Interlake fleet*

service by June 1. By the middle of last year 198 were operating, representing about 60 per cent of the fleet, as regards numbers, and 63 per cent of capacity.

It is doubtful if as large a number will operate at any period this year. Of one thing, shippers appear to be convinced—that average monthly shipments will be much heavier in the second half than in the first half of the season.

Reinforcing Group Meets

Chicago — Concrete Reinforcing Steel institute held a sectional meeting at the Sylvania hotel, Philadelphia, April 8. The institute recently announced that three sectional meetings this year would replace the annual meeting scheduled in Atlanta, Ga., early in March. The Atlanta meeting was the first of the sectional meetings. Institute activities were reviewed at the morning session, after which a discussion of problems of mutual interest, and a formulation of plans for the ensuing months of the fiscal year took place. Regional conferences were held in the afternoon for New York, Philadelphia and Washington groups.

More Quotas Set by France

Washington—For the period March 20-June 30 France has established an import quota of 2956 tons of semi-finished steel from Belgium and Germany and 19 tons from all other countries, including the United States. Quota for hoops for the same period is 95 tons from Belgium and 23 tons from all other countries.

Import Much Dutch Iron

Philadelphia—In addition to 11,224 tons of pig iron from the Netherlands, importations at this port during the week ended April 7 included 303 tons from British India and 150 tons from England; also 49 tons of iron ore from Spain.

Calls House Conference

American Institute of Steel Construction Inc., New York, has called a conference at 29 West Thirty-ninth street, New York, May 24-25, for the interchange of data pertaining to the construction of steel residences.

Closing Elmira Plant

American Bridge Co. intends closing its Elmira, N. Y., plant, employing 300 men, for 6 months beginning May 1.

Soviet Iron Goal 22,000,000 Tons

PRODUCTION of 22,000,000 metric tons of pig iron by 1937, or five times the actual output of 1931, is one objective of the second 5-year plan being adopted by Soviet Russia, according to the USSR chamber of commerce, Moscow.

For 1932, final year of the first 5-year plan, the program is: Pig iron, 9,000,000 tons; steel ingots, 9,500,000 tons; finished rolled steel, 6,600,000 tons; high-grade steel (probably alloy steel), 1,400,000 tons; ferroalloys, 170,000 tons; pipe (not specified) 432,000 tons.

For purposes of comparison, output of pig iron of all kinds in 1931 in the United States was 17,957,779 gross tons, the record being 41,757,215 tons in 1929. Output of steel ingots in the United States in 1931 was 24,900,195, with 55,475,397 tons in 1929 the record.

□ □ □

First blast furnace at the new steelworks for the Soviet Steel Combine at Kuznetsk, Siberia, was lighted April 1 and the first cast of pig iron obtained April 3. This blast furnace is the first unit of a plant designed for an annual capacity of more than 1,000,000 tons of steel and being built by the Freyn Engineering Co., consulting engineers, of Chicago.

□ □ □

Soviet engineers claim to have invented "a new elevator for mechanically loading blast furnaces which not only entirely replaces the best foreign equipment but has in addition a number of features which make it an improvement over them," states the U.S.S.R. chamber of commerce, Moscow.

□ □ □

The "Lenin" metal works at Zlatoust, in the Urals, is claimed to be making the first stainless steel produced in the soviet union. The Dnepropetrovsk Institute of Metals states it is producing chromium-tungsten steel in an ordinary open-hearth furnace. The Leningrad Institute of Metals claims to have discovered a superior method for making malleable iron.

How Jobless Can Garden

HOW corporations can help their unemployed and part-time workers through the depression by tending gardens is related in a special bulletin being distributed by the President's Organization on Unemployment Relief, 1734 New York avenue, N. W., Washington.

Efforts of the Dayton Malleable Iron Co. and the National Cash Register Co., Dayton, O.; International Harvester Co., Richmond, Ind.; and the United States Coal & Coke Co., Gary, W. Va., are cited as examples of what can be done.

Indicts Free Competition as Bane of Business

The principle of free, unrestrained competition, which is guaranteed by the antitrust laws and which was intended to protect the small businessman, has produced a continuous waste of natural resources, a dwindling of profits and capital and the unnecessary suffering and juggling of human labor, it was charged by Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel, at a meeting of the American Trade Association Executives in New York, April 5, over which he presided.

Wider powers for trade associations to balance production with consumption, to assure a reasonable return on investment and to maintain steady level of employment, was urged by Mr. Schwartz. He stated that the small businessman and independent manufacturer, whose interests have been overlooked during the development of the last ten years, are still the backbone of American economic life and that their interests can only be served by co-operation through trade associations under liberal interpretations of the law.

Crucible Gets Drawback

Washington—Treasury department has allowed a drawback on tungsten steel and nickel alloy steel manufactured by the Crucible Steel Co. of America at its factories at Syracuse, N. Y., and Harrison and Jersey City, N. J., with the use of imported tungsten.

Salvaged Steel Dutiable

Washington — The United States Court of Customs and Patent Appeals has ruled that welded steel casings and pipes which were shipped from New York and the vessel wrecked before reaching its destination, and the merchandise salvaged and shipped back to the United States should be assessed with duty.

Arena Method Is Patented

The type of construction embodied in the arena at Lake Placid, N. Y., illustrated in STEEL for March 14, is patented by the Arch Roof Construc-

tion Co. Inc., New York. Other patents on this type by this company are pending.

Merger Negotiations Have Not Been Renewed

Rumors have been revived concerning new negotiations for a merger by the Bethlehem Steel Corp. and Youngstown Sheet & Tube Co., but it is authoritatively stated they have no foundation in fact. The most specific statement contained in the reports is that auditors are at work on Sheet & Tube books to obtain data for negotiations; this is officially denied.

That there is likely to be a merger eventually is not doubted, as the proponents of the merger that was blocked by injunction still believe it would be of advantage to both companies. But no steps now are under way, and none appears in immediate prospect.

Award Screen Wire Cloth

Washington—John A. Roebling's Sons Co., Trenton, N. J., has been awarded 60,000 square feet screen wire cloth, No. 14 mesh, for Camp Knox, Ky., with a bid of 1.624c, delivered.

Western Roads Show Gain

Chicago—In revenue freight loadings, seven leading western railroads made a slight gain in March over February, first improvement of these roads in many months.

The Business Week In Washington

BUSINESS may feel reassured that chances of any soldier bonus legislation becoming effective at this session are negligible, thereby averting a record peace-time issue of federal bonds.

The tax bill as passed by the house is now being given hearings by the senate finance committee, these hearings probably continuing for two weeks. Following this, the committee will consider the measure privately and recommend certain changes.

Efforts to revive the sales tax appear doomed and the bill is expected to emerge from the senate committee largely as it passed the house.

□ □ □

Farm machinery exports from the United States in February were 11 per cent greater than in January, according to the department of commerce.

□ □ □

February immigration fell again. It was 88 per cent below the average February immigration for the past seven years.

□ □ □

President Hoover recommends abolition of the United States shipping board and the transfer of its duties to other departments.

Wheels Released to Budd

Philadelphia—Budd Wheel Corp. has received important releases for automobile wheels which will materially increase this company's shipments the rest of April and in May.

Arranging Farrell Dinner

New York—Charles M. Schwab, chairman, Bethlehem Steel Corp.; William J. Filbert, vice chairman of the finance committee, United States Steel Corp., and E. P. Thomas, a vice president of the Steel corporation, comprise the committee in charge of arrangements for the dinner in honor of James A. Farrell, retiring president of the Steel corporation, April 21. Invitations have been issued and the program is being arranged.

What's Happening In Business World

A STEEL propectile piercing 12 inches of armor plate at a distance of 12 miles was announced by Sir Robert Hadfield at the recent annual meeting of Hadfield's Ltd., England.

□ □ □

Colorado is to appear before a senate committee at Washington to demand subsurface as well as surface rights to 6,000,000 acres of "public domain" within the state, which would affect mineral rights.

□ □ □

About 34,000 General Electric employes hold a total of $39,000,000 of General Electric Employes Securities Corp. bonds, on which the interest rate is 6 per cent plus 2 per cent paid by the company so long as the holders remain employes.

□ □ □

"Vesterport," a 7-story structure in Copenhagen with a framework of steel, walls of light concrete and sheathed with copper sheets is the largest commercial building in the world entirely surfaced with metal, the Copper and Brass Research association, New York, contends.

Jobbers Name Commissioner

New York—W. H. A. Austin, at once time secretary of the Eastern Steel Co., Pottsville, Pa., has been appointed a commissioner for several leading jobbers here to attempt an adjustment of warehouse problems, made especially complicated by imports of foreign steel.

Increase Furnace Value

Buffalo—Fixed property value assessment of the Canadian Furnace Co. Ltd., Port Colborne, Ont., has been increased from $50,000 to $75,000.

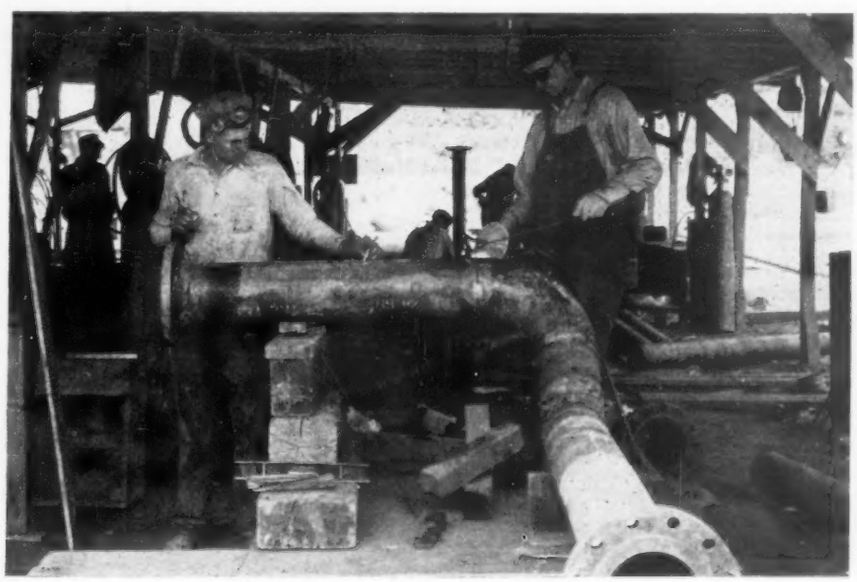


Photo Linde Air Products Co.

Outdoor welding fabricating shop organized for interior pipe fabrication for the new plant of the Carbide & Carbon Chemicals Corp., Diamond, W. Va. All oxwelded pipe fabrication was completed in this outdoor shop, the erecting crew doing nothing but actual erection of the pipe, all details being completed outside and the work going to the job complete

Ingot Rate Falls in March, But Not to December Low

PRODUCTION of open-hearth and bessemer steel ingots, on a daily basis, declined in March to 52,253 gross tons, a record low for that month. This rate was less than one-half of the 115,138 tons produced daily in March, 1931, and with the exception of December, 1931, was the lowest point of this depression.

This latter fact, that following gains in January and February the March retreat did not surrender all of the improvement, is a factor for encouragement. With automobile requirements developing even in a slight degree, it is believed the April rate will show some improvement.

Quarter 40 Per Cent Under 1931

March output of 1,410,830 gross tons of ingots put the first quarter total at 4,331,667 tons, compared with 7,954,645 tons in the first quarter of 1931. In the quarter just closed, steelmaking capacity was engaged at an average of 26.22 per cent, according to the American Iron and Steel institute.

In comparison with peak production of 1929, and some previous years, bessemer steel is holding its position relatively better than open hearth. In March, bessemer showed a moderate gain in total production over February, and failure of open-hearth steel to maintain its position in large measure caused the decline.

Actual Iron Output of March Betters Estimate

Actual production of coke pig iron in the United States in March totaled 967,015 gross tons, this being an increase of 6465 tons over the 960,550 tons of February. March, however, was a two-day longer month than February. Figures compiled just as the month closed and published on Page 20, April 4 issue of STEEL, involved some estimation and showed the March output to be slightly less than in the preceding month.

The actual average daily rate in March was 31,194 tons, which compared with the 33,122 tons of February, was a decrease of 1928 tons, or 5.8 per cent. This figure was the lowest for the present depression as well as the lowest since the 30,802-ton daily rate of August, 1921. The March rate was but 3302 tons per day above the all-time low point of 27,892 tons of July, 1921.

Active blast furnaces on March 31 numbered 60, this figure remaining the same as previously reported. This was a loss of 4 stacks from the 64 operating on Feb. 29. One merchant furnace was blown in and 5 blown out or banked; of the nonmerchant class, 6 were blown in and 6 removed from blast.

Steel Ingot Production—1931-32

95.21 Per Cent of Industry Reporting
Gross Tons

1931	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	2,044,298	296,620	2,340,918	2,458,689	27	91,063	42.86
Feb.	2,085,529	296,974	2,382,503	2,502,366	24	104,265	49.08
Mar.	2,504,060	346,137	2,850,197	2,993,590	26	115,138	54.20
3 mo.	6,633,887	939,731	7,573,618	7,954,645	77	103,307	48.63
Apr.	2,275,404	316,668	2,592,072	2,722,479	26	104,711	49.29
May	2,083,833	301,639	2,385,472	2,505,485	26	96,365	45.36
June	1,730,109	246,365	1,976,474	2,075,910	26	79,843	37.58
July	1,570,776	225,030	1,795,806	1,886,153	26	72,544	34.15
Aug.	1,462,469	174,631	1,637,100	1,719,462	26	66,133	31.13
Sept.	1,274,321	199,151	1,473,472	1,547,602	26	59,523	28.02
Oct.	1,320,158	195,943	1,561,101	1,592,376	27	58,977	27.76
Nov.	1,276,906	240,441	1,517,347	1,593,684	25	63,747	30.01
Dec.	1,069,468	170,546	1,240,014	1,302,399	26	50,092	23.58
Total	20,697,582	3,009,894	23,707,476	24,900,195	311	80,065	37.69
1932							
Jan.	1,230,661	160,633	1,391,294	1,461,290	26	56,203	26.54
Feb.	1,232,568	157,067	1,389,635	1,459,547	25	58,382	27.57
Mar.	1,149,307	193,944	1,343,251	1,410,830	27	52,253	24.68
3 mo.	3,612,536	511,644	4,124,180	4,331,667	78	55,534	26.22

Figures exclude crucible and electric ingots. Operating percentages for 1930 are based on capacity of 62,265,670 gross tons as of Dec. 31, 1929; for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930.

Financial News of Steel Industry

NEWTON STEEL CO., Monroe, Mich., had net loss of $890,631 after charges in 1931. In 1930 the company operated at a loss of $99,781. Balance sheet shows total assets, $13,826,838; current assets, $2,139,811; current liabilities, $959,941, all as of Dec. 31, 1931.

□ □ □

Perfect Circle Co., Hagerstown, Ind., reports 1931 net profit of $901,831, equal to $5.55 a share. This compares with net of $608,503 or $3.74 a share in 1930.

□ □ □

Hamilton Bridge Co. Ltd., Hamilton, Ont., reports net profit of $157,856 in 1931, against $303,340 in 1930. Deduction of preferred dividends of $143,552 left a net balance of $14,304 for 1931.

□ □ □

Doehler Die Casting Co., New York, earned $139,113 in 1931, which was equal to 4 cents a share after preferred payments. By comparison, the same amount per common share was earned in 1930.

□ □ □

General Electric Co., Schenectady, N. Y., has declared a dividend of 25 cents per share, payable April 25 to record March 18. An abstract of the company's 1931 report shows earnings of $1.33 a common share.

Canadian Steel Output Off

Toronto, Ont.—Output of steel ingots and castings in Canada in February was 28,469 gross tons, 13 per cent over the 25,060 tons of January and comparing with 82,637 tons in February, 1931. The two-month total for 1932 is 53,529 tons: for 1931 it was 221,812 tons.

February pig iron total was 10,507 gross tons, compared with 10,305 tons in January and 46,395 tons in February, 1931. Output of ferroalloys in February was 1431 tons; in January it was 1823 tons.

Is Low on Alloy Bars

Philadelphia — Associated Alloy Steel Co., Philadelphia, is low on 8400 pounds corrosion-resisting steel bars for the navy yard here at 32.875c a pound, delivered.

Pig Iron Erases Gains of a Quarter Century

SINCE 1904, a span of more than a quarter century, only two years have shown smaller production of pig iron and ferroalloys than 1931, according to figures of the American Iron and Steel institute. Total output in 1931 was 18,426,354 gross tons. Of this 17,957,779 tons was pig iron and 468,575 tons was ferroalloys. Total production in 1904 was 16,497,033 tons. Since then only 1908 and 1921 have fallen below the 1931 figure. Thus the tremendous growth of the steel and iron industry, in volume, for more than two decades and a half was wiped out by the unparalleled slump of 1931.

Loss Is Nearly Half

The loss of 1931 from 1930 was 41.97 per cent, compared with 25.49 per cent decline in 1930 from the alltime record of 1929. In pig iron the decline from 1930 was 42.11 per cent and in ferroalloys it was 35.92 per cent. In tonnage 1930 produced 31,752,169 tons and 1931 made 18,426,354 tons.

Losses were most severe in the East and West, with the interior states increasing their percentages. Thus Pennsylvania in 1931 produced 28.05 per cent of the total, compared with 32.13 per cent in 1930 and Massachusetts and New York 6.40 per cent, against 6.48 per cent in 1930.

Ohio, Indiana, Michigan, Alabama and the Maryland, Virginia, West Virginia, Kentucky and Tennessee group each increased its percentage of the total production. Minnesota, Colorado, Iowa and Utah dropped in proportionate production from 1930. In spite of this shift Pennsylvania led in tonnage with Ohio second and the other states in the same order as in 1930, the changes not being sufficient to disturb the relative rank.

Merchant Iron Gains Slightly

Slight change was made in the relation of merchant and nonmerchant iron. The former was 4,339,237 tons in 1931, or 23.5 per cent, compared with 7,082,635 tons in 1930, which was 22.3 per cent of the total for that year. Steelmaking iron, produced for the maker's own use, totaled 14,087,117 tons or 76.5 per cent of the total, compared with 24,669,534 tons or 77.7 per cent of the total production in 1930.

The only item showing an increase in 1931 over 1930 is the tonnage of ferroalloys produced in the group including Maryland, Virginia, West Virginia, Alabama and Tennessee. This item in 1930 was 42,880 tons and in 1931 it was 58,074 tons, an increase of 35.43 per cent.

PRODUCTION OF PIG IRON BY GRADES AND FERRO-ALLOYS BY KINDS, 1930–1931, SHOWING DECREASE.

Grades of pig iron and kinds of ferro-alloys.	1931.	Per cent.	1930.	Per cent.	Decrease.	Per cent.
Pig iron:						
Basic	10,174,447	56.66	18,393,384	59.29	8,218,937	44.68
Bessemer and low-phosphorus	4,635,648	25.81	7,314,749	23.58	2,679,101	36.63
Foundry	2,133,939	11.88	3,622,779	11.68	1,488,840	41.10
Malleable	945,664	5.27	1,571,512	5.07	625,848	39.80
Forge	36,482	.20	50,696	.16	14,214	28.04
All other pig iron	31,599	.18	67,787	.22	36,188	53.38
Total pig iron	17,957,779	100.00	31,020,907	100.00	13,063,128	42.11
Ferro-alloys:						
Ferro-manganese, Spiegeleisen	234,808	50.11	362,386	49.56	127,578	35.20
Ferro-silicon	211,284	45.09	337,640	46.17	126,356	37.42
All other ferro-alloys	22,483	4.80	31,236	4.27	8,753	28.02
Total ferro-alloys	468,575	100.00	731,262	100.00	262,687	35.92
Grand total	18,426,354	.....	31,752,169	.....	13,325,815	41.97

PRODUCTION OF PIG IRON AND FERRO-ALLOYS BY STATES, 1930–1931, SHOWING INCREASE OR DECREASE BY STATES.

States.	Production—Gross tons.					
	1931.	Per cent.	1930.	Per cent.	Decrease.	Per cent.
Pig iron:						
Pennsylvania	5,037,672	28.05	9,967,618	32.13	4,929,946	49.46
Ohio	4,120,610	22.95	6,688,658	21.56	2,568,048	38.39
Indiana, Michigan	2,327,839	12.96	3,934,212	12.68	1,606,373	40.84
Illinois	1,964,735	10.94	3,344,631	10.78	1,379,896	41.26
Alabama	1,640,851	9.14	2,382,221	7.68	741,370	31.12
Mass., New York	1,149,677	6.40	2,008,812	6.48	859,135	42.77
Maryland, Virginia, West Va., Ky., Tenn.	1,419,987	7.91	1,922,314	6.20	502,327	26.13
Minn., Ia., Colo., Utah	296,408	1.65	772,441	2.49	476,033	61.64
Total pig iron	17,957,779	100.00	31,020,907	100.00	13,063,128	42.11
Ferro-alloys:						
Pennsylvania	195,552	41.73	337,268	46.12	141,716	42.02
New York, New Jersey	125,597	26.81	202,622	27.71	77,025	38.01
Ohio, Ill., Ia., Colo.	89,352	19.07	148,492	20.31	59,140	39.83
Md., Va., W. Va., Ala., Tenn.	58,074	12.39	42,880	5.86	*15,194	*35.43
Total ferro-alloys	468,575	100.00	731,262	100.00	262,687	35.92
Grand total	18,426,354	.....	31,752,169	.....	13,325,815	41.97
Pig iron	17,957,779	97.46	31,020,907	97.70	13,063,128	42.11
Ferro-alloys	468,575	2.54	731,262	2.30	262,687	35.92

*Increase.

PIG IRON AND FERRO-ALLOYS MADE FOR SALE OR FOR USE OF MAKERS IN 1931.

Pig iron and ferro-alloys.	For sale.	For maker's use.	Total. Gross tons.
Pig iron:			
Basic	993,027	9,181,420	10,174,447
Bessemer and low-phosphorus	166,519	4,469,129	4,635,648
Foundry	1,937,504	196,435	2,133,939
Malleable	849,467	96,197	945,664
Forge or mill	36,482	.....	36,482
White and mottled, direct castings, etc.	16,889	14,710	31,599
Total pig iron, Gross tons.	3,999,888	13,957,891	17,957,779
Ferro-alloys:			
Ferro-manganese and spiegeleisen	105,582	129,226	234,808
Ferro-silicon	211,284	.....	211,284
All other ferro-alloys	22,483	.....	22,483
Total ferro-alloys, Gross tons.	339,349	129,226	468,575
Total pig iron and ferro-alloys, G. T.	4,339,237	14,087,117	18,426,354

PRODUCTION OF HOT, AND WARM BLAST CHARCOAL PIG IRON, GROSS TONS, 1927–1931.

States.	1927.	1928.	1929.	1930.	1931.
Alabama, Tennessee, Michigan	164,569	142,960	138,193	96,580	46,213

Industrial Men in the Day's News

Donald B. Gillies, President, Corrigan, McKinney Steel Co., Cleveland

HE became associated with the Corrigan, McKinney Steel Co. in 1906, having charge of its properties in Mexico.

EDUCATED in mining engineering, his career was first devoted to western silver and copper firms at Butte, Mont.

SINCE 1917 he has been vice president of the company he now heads.

DONALD B. GILLIES, formerly vice president of the Corrigan, McKinney Steel Co., Cleveland, who was recently named to the presidency of the company in place of William G. Mather, who now is chairman of the board, is essentially an iron ore man, having had practically all his training in the steel industry in that branch.

He is a Canadian by birth, being born of Scotch parentage Nov. 4, 1872, at Bruce Mines, Ont. However, his early life was spent in northern Michigan, and in 1893 he was graduated as a mining engineer from the Michigan College of Mining and Technology, at Houghton, Mich.

Mr. Gillies went west following college and located in Butte, Mont. For the next 13 years he had several positions in the West and in Mexico.

First, he entered the employ of Senator Clark at Butte as a mining engineer and gradually worked up to the position of general manager of all of Senator Clark's mining properties, holding that office for the next ten years.

Then, Mr. Gillies left the Clark interests to take charge of the Parrott Silver & Copper Co. as general manager, a position he held until these properties were consolidated with the Anaconda Copper Co.

For the next five years, Mr. Gillies followed his profession of mining engineer in various western states. In 1906 he located in Mexico and associated himself there with the Corrigan, McKinney Steel Co., having charge of its Mexican properties.

Eleven years later, in 1917, he was called to Cleveland as vice president in charge of all mining properties of the McKniney company, the office he has held until his recent change.

In 1931 the Michigan College of Mining and Technology, from which Mr. Gillies was graduated 38 years previously, conferred on him the honorary degree of doctor of engineering.

COL. J. S. ERVIN, formerly vice president and sales manager of the H. H. Robertson Co., Pittsburgh, manufacturer of building products, has been elected president of the Mackintosh-Hemphill Co., Pittsburgh, builder of rolling-mill machinery and steel plant equipment.

F. Hughes Moyer has been elected vice president in charge of engineering, succeeding W. L. Ditges. Prior to joining the Mackintosh-Hemphill Co. in 1926, Mr. Moyer had been chief engineer successively of the Gary, Ind., plant of the Illinois Steel Co., the Johnstown, Pa., plant of the Bethlehem Steel Co. and the Clairton, Pa., plant of the Carnegie Steel Co., as well as the United Alloy Steel Corp., Canton, O.

□ □ □

William K. Glen, formerly advertising manager of Crane Co., Chicago, has been appointed divisional manager in charge of the Chicago district. Mr. Glen will be in charge of all matters pertaining to sales development and merchandising in that territory.

□ □ □

Joseph E. Otis Jr., vice president and general manager of the Alemite Corp., Chicago, has been elected a director of Stewart-Warner Corp., Chicago.

□ □ □

Howard L. Haskin, formerly manager of the Madison, Wis., branch of the Truscon Steel Co., Youngstown, O., has resigned to become manager of the building material department of the Wiedenbeck-Dobelin Co., Madison, now handling a complete line of structural shapes, reinforcing steel and steel sash.

□ □ □

Walter DeFries, recently identified with the William B. Pollock Co., Youngstown, O., has joined the Pittsburgh Steel Foundry Corp., Glassport, Pa., in a special sales engineering capacity. Mr. DeFries was in charge of engineering of steel plate construction with the Pollock company, previously having been associated with the Well-

man Engineering Co., Cleveland, in charge of gas producer development and producer gas application. Prior to that time he was connected with the United Alloy Steel Corp., Canton, O., as fuel engineer in charge of fuel practice on all plant operations.

□ □ □

Robert W. Grace, formerly with the Lake Shore Machinery Co., Muskegon, Mich., has been named representative at Muskegon for the Cleveland Crane & Engineering Co., Wickliffe, O.

□ □ □

Howard F. Kulas, former vice president, and in charge of the engineering and research division of Midland Steel Products Co., Cleveland, has resigned.

□ □ □

Ernest T. Weir, chairman of the board, National Steel Corp., Pittsburgh, and ten other directors of the National corporation were re-elected at the annual meeting March 31. Officers were also re-elected.

□ □ □

Henry A. Butler, senior partner in Butler, Wick & Co., Youngstown, O., has been elected a director of Sharon Steel Hoop Co., Sharon, Pa., to fill a vacancy. Other directors have been re-elected.

□ □ □

Sir Henry Fowler, assistant to the vice president for research and development, Midland Railway Co., Derby, England, has been elected president of the Institute of Metals, London.

□ □ □

Charles F. Smith, law partner of the late John F. Harrington, who was a former president of the Trumbull Steel Co., Warren, O., and who died recently in Australia, has been elected to the board of directors of the General Fireproofing Co., Youngstown, O., to succeed Mr. Harrington.

□ □ □

C. E. Heywood, manager of the order and shipping department, Illinois Steel Co., Chicago, has just completed 50 years' service with the Illinois Steel Co. and its predecessor, the North Chicago Rolling Mill Co. He started at the age of 14 in the latter company in 1882.

□ □ □

William J. Crowe, formerly superintendent of the Minnequa rolling mills at Pueblo, Colo., of the Colorado Fuel & Iron Co., and who for the past 14 months has been designing engineer in the erection of the steel rolling mills in Kuznetsk, Moscow and Leningrad, Russia, returned to Pueblo recently.

□ □ □

Arthur Andersen, of Arthur Andersen & Co., Chicago, accountants; Thomas McMillan, president of the Canadian Fairbanks, Morse Co. Ltd.; C. H. Poppenhusen and F. C. Dierks have been elected directors of Fairbanks, Morse & Co., Chicago. They fill vacancies caused by the resignations last year of W. S. Hovey, W. E. Miller, F. M. Boughey and H. W. Fenton. P. C. Brooks, a vice president, has been made executive vice president.

□ □ □

E. J. Walsh, vice president and general manager of the Chattanooga Boiler & Tank Co., Chattanooga, Tenn., has been nominated by the Chattanooga Purchasing Agents association for election to the vice presidency of the National Association of Purchasing Agents for the fourth region.

□ □ □

B. S. Stephenson, chairman of the purchasing agents' committee of the American Radiator & Standard Sanitary Corp., New York, has been named vice president. He will continue in his capacity dealing with purchases and raw materials for the company. From 1910 to 1926 Mr. Stephenson was affiliated with the M. A. Hanna Co. and since his connection with the American Radiator concern has devoted much of his duties to the raw material subsidiaries of the company, being president of the Ideal Supply Co. and the Humphreys Coal & Coke Co., as well as vice president both of the Tonowanda Iron Corp. and the James Mining Co.

Obituaries

AUGUSTUS B. WOLVIN, 75, a pioneer in shipping on the Great Lakes, died at his home in Duluth March 31. He was president of the Superior Shipbuilding Co., Superior, Wis., from 1898 to 1912 and in 1901, when the Pittsburgh Steamship Co. was formed as the ore-carrying subsidiary of the United States Steel Corp., Mr. Wolvin was named vice president and general manager. At that time the company had a fleet of 116 ships. In 1900 Mr. Wolvin became famous as the builder of the first 500-foot ore carriers. These were the J. J. HILL, JOHN W. GATES, ISAAC L. ELWOOD and the WILLIAM EDENBORN.

In 1902 he built a steamer with hatches, making it possible to place an ore-loading spout in each simultaneously, and in 1904 he built a steamer revolutionary in design and 60 feet longer than any other vessel on the Lakes, the AUGUSTUS B. WOLVIN. Her hold construction was novel in that main deck beams and stanchions were omitted. Since that time every vessel on the lakes has been built on the girder system. In 1904 he organized, and until his retirement, was president of the Zenith Furnace Co., Duluth, operating a merchant blast furnace and now a part of Interlake Iron Corp., Chicago.

□ □ □

Aaron Mann, 40, president of the Mann Iron & Steel Co., Norristown, Pa., died April 2.

□ □ □

Charles L. Lamarche, 75, president, American Malleable Castings Co., Marion, O., died at Marion April 5. He organized the company in 1905. Three surviving sons are officials of the company.

□ □ □

Charles H. Bell, 59, president, Bell Mfg. & Tool Co., Cleveland, died at Cleveland, April 7. He want to Cleveland from Olean, N. Y., 30 years ago and was known as an authority on metal stamping. He was the patentee on various tank and hub caps.

□ □ □

A. W. Nickerson, 60, superintendent of the Ensley, Ala., plant, Semet-Solvay Co., died recently. He was an employe of the company for more than 20 years, the last four of which were as superintendent of the Ensley plant. He was an authority on coal and coke by-products.

□ □ □

John R. Russell, 74, former president of the Great Lakes Engineering Works, Detroit, died at Detroit, April 1. In 1902 with associates he undertook the reorganization of the Riverside Iron Works, forming the Great Lakes concern and becoming its secretary and treasurer. The company became one of the leading engine and boat builders on the Great Lakes. Mr. Russell was also vice president of the Clayton & Lambert Mfg. Co., Detroit.

□ □ □

Francis E. Drury, 81, founder of the Perfection Stove Co., Cleveland, died at Augusta, Ga., April 3. He was born in Pittsfield, Mich., in 1850 and entered the hardware business in Cleveland in 1870. In 1888 with H. P. Crowell he organized the Cleveland Foundry Co. Shortly afterward he became interested in the manufacture of the oil stove. In 1910 the Cleveland Metal Products Co. was organized and about 1924 this concern became the Perfection Stove Co. Mr. Drury was chairman of the board until 1930 and a director at his death.

□ □ □

Halford Erickson, 68, vice president in charge of operations, Byllesby Engineering & Management Corp., Chicago, died April 7, at his home, Oak Park, Ill. He was born July 7, 1864, in Sweden, where he received his early education. He joined the Byllesby organization in 1918 as vice president of Louisville Gas & Electric Co. and served in that capacity for five years. In January, 1923, he was elected a vice president and director in charge of operation of all subsidiary utility properties of Standard Gas & Electric Co.

MIRRORS of MOTORDOM

DETROIT

TEN days after the introduction of his eight it appears safe to appraise Henry Ford as the most commanding figure in industrial life today and the master showman of them all.

As news, description of the new Ford was the second greatest event of the year, subordinate only in general interest to the Lindbergh baby kidnapping case. After-events show Ford was not ready, from the standpoint of production, but he beat General Motors' gala week and the new Plymouth to the post.

By offering a smart 8-cylinder automobile in the low-price field Ford unquestionably has created a new standard of value. Not only that, he has easily wiped a billion dollars off the value of automobiles now on the highways. Some millions thronged the showrooms and acclaimed something that will eventually cost them money.

Being driven today are about 5,000,000 cars, 6 years or older, whose trade-in rating is probably not to exceed $100. In the luxury class are about 1,000,000 automobiles, also presumably outside the periphery of Ford competition.

'Middle Class' Cars Hit

But between these upper and lower ranges are some 15,000,000 cars which, when appraised for trading-in, must stand up against the fact it is possible to buy a comfortable, snappy eight for less than $500, Detroit. It probably is conservative to say that these 15,000,000 "middle class" cars have suffered an accelerated depreciation of at least $75 each in the past ten days.

As was the case at Shanghai, war has not been formally declared but such a state exists in the low price field. Evidencing the influence of the Ford base price, Chevrolet, Pontiac six and Hupp six already have reduced prices. Excepting its "thrift models," Plymouth is priced slightly higher than Ford and Chevrolet.

Detroit, which has felt the sting of Ford unemployment more seriously than the slack of competing manufacturers, is inclined to be a trifle grudging in its comments. There is the feeling that final judgment on the Ford eight will not have been rendered until the first series has been on the street a year and owners have tested its service and operating charges.

No Easy Road for Ford

Chevrolet, stressing the economy of a six, and Plymouth with bodies notably larger than either Ford or Chevrolet and having free-wheeling, hydraulic brakes and an automatic clutch to emphasize, will offer stiff competition, Detroit believes. However, there is no discounting the appeal of an eight.

In some cities the delivered prices of comparable Ford and Chevrolet models are almost identical, presaging stiff competition in used-car appraisals. Ford dealers are being warned that unwarranted appraisals, weakening the agencies, will result in revocation of contracts.

Whether automobile prices are being reduced or increased, considerable pain accrues to material and parts suppliers. Some recent advances have been predicated, openly, upon higher costs of raw materials, but purchasing departments have never been closer in buying.

The reductions consequent to display of the new Fords have aroused some apprehension of further pressure upon sources of supply. Among the latter, the feeling is widespread that the automobile industry has not liquidated itself to any degree comparable to that of its supply interests.

Though material prices have receded very appreciably, retail prices of automobiles are largely unchanged from 1929. More value is offered for the consumer's dollar, and an unusual number of "gadgets" have been put on 1932 models, but the cost of these probably does not exceed the saving in steel and other costs. There is some opinion that what the country needs is not so much a six or an eight at $500 as a four at $350.

In fact, some argument can be stimulated in Detroit that the country has not had a low-price car since Ford dropped Model T early in 1927. No small part of the large demand for Model A in its early days was from fleet buyers. These are now noticeably absent from the market, and it is expected that the new 4-cylinder model will be pushed when this market comes back.

Between the Ford and General Motors' manufacturing policies a variance is more apparent. The trend in Ford in recent months has been toward decentralization; in General Motors toward centralization. A much larger proportion of Ford parts is now being supplied from outside interests than was the case 5 years ago. General Motors will tend more to use idle capacity of one subsidiary to make parts for another—a trend which will be accentuated as business becomes better.

300 Ford Eights Daily

Last week Ford appears to have emerged from the chrysalis stage with the new eight, and is on the verge of swinging into volume production. By Friday, the daily rate on the eights had been stepped up to 300, due largely to the surmounting of difficulties with production technique on the engine.

Cash deposits on over 300,000 new eights are claimed to be in hand, insuring a desire to attain quantity production promptly. Ford agencies which lacked at least one sample car

on the first showing March 31 have now been supplied, and thus far the trend of Ford selling is to close on cash deals and subordinate trades.

Substantial releases of finished steel are believed probable this week. Partsmakers have received heavier releases. On commercial cars more progress has been made, relatively, than on passenger models, due for one reason to the fact the commercial cars are powered with a refined Model A engine. Banks of parts continue irregular, both at the Rouge and at assembly plants, and further orders will partially be predicated on a policy of evening these up.

These orders for steel will be, for all practical purposes, the first participation of Ford in the finished steel market since late last year when materials for 50,000 bodies were placed and partly fabricated. Therefore, it is expected that April bookings in the Detroit district will be the heaviest in four or five months.

10,000 Chevrolets Weekly

Chevrolet, on a 4-day week, is averaging 2500 to 3000 units daily. Hudson-Essex, on a 3-day week, is holding at about 400 units daily. Graham, on a 4-day week, is averaging about 125 units daily, with its April program 2500 units, an increase of 25 per cent over March.

Weekly rates of other producers, which are largely unchanged, are: Buick 1500, Willys-Overland 1100, Nash 1000, Studebaker 1400, Cadillac-LaSalle 275, Olds 600, Packard 325, Rockne 1250, Pontiac 1250, Hupp 350. Plymouth, which is stocking its dealers with the new model, is operating 5½ days a week, at about 800 units daily.

During January, February and March, output of passenger cars and trucks held closely to the under side of 125,000 units. Provided Ford picks up as now seems probable, April should turn in a total of at least 150,000 units. Any estimate for April, however, is subject to overnight revision.

Cold Drawn Strip Placed

New York—Elliott Bros. Steel Co., New Castle, Pa., has been awarded 150,250 feet 0.125-inch cold drawn strip steel at 2.80c a pound. Material is for the Frankford arsenal. Keystone Drawn Steel Co., Spring City, Pa., booked 56,000 feet, 1⅞-inch, cold drawn bars for Frankford at 2.65c, delivered.

Bids Low on Stacks

New York—Snead & Co., Jersey City, N. J., is low on metal library stacks for the department of agriculture, Washington, at $57,981, requiring a fair-sized lot of sheets.

Here and There in Industry

SURFACE COMBUSTION CORP., Toledo, O., has taken an order from the Chrysler Corp. for an additional continuous gas carburizing furnace, using the eutectrol process, for installation at its plant at Newcastle, Ind. It will be used in carburizing free wheeling shafts.

□ □ □

Art Metal Construction Co., Jamestown, N. Y., has established salesrooms in Los Angeles for distribution of its products.

□ □ □

Republic Steel Corp., Youngstown, O., has appointed Hill-Chase & Co. Inc. a distributor in the Philadelphia district for its corrosion resistant steels.

□ □ □

Altorfer Bros. Co., Peoria, Ill., manufacturer of washing machines, has decided to establish a Canadian branch at Montreal, Que.

□ □ □

Central Steel & Wire Co., 4545 South Western boulevard, Chicago, has been made distributor for the Rustless Iron Corp. of America, Baltimore, in Chicago territory.

□ □ □

Service Saw & Knife Co. has opened for business at 832 West Sixth street, Cincinnati, as distributor of saws, knives, files and tools, with service and repair facilities.

□ □ □

Safety Grinding Wheel & Machine Co., Springfield, O., has moved its eastern office to apartment 307, 1508 West Allegheny avenue, Philadelphia. Charles G. Smith is district manager.

□ □ □

Jaeger Machine Co., Columbus, O., has called a special meeting of stockholders for April 16 to vote on the proposed sale of its Duplex Foundry division at Elyria, O., to Lloyd Brown, chairman of the board.

□ □ □

Ketler-Elliott Co., 3101 South California avenue, Chicago, has appointed Arthur Haller, 258 South Hudson avenue, Pasadena, Calif., its sales agent in California territory to handle its line of hand and pneumatic tools.

□ □ □

Isaacson Iron Works, Seattle, has started production of a loading and end gate for high-bed truck loading and unloading. The heavy-duty type has a lifting capacity of 2500 pounds, and the medium duty of 1500 pounds. The device is powered from the truck motor through a standard transmission power take-off and a controlled hydraulic pump and cylinder.

□ □ □

Holo-Krome Screw Corp., Hartford, Conn., has been licensed by the Dardelet Threadlock Corp., New York, to manufacture socket head cap screws, hollow set screws and countersunk pipe plugs threaded with the Dardelet self-locking thread.

□ □ □

Hamilton Mfg. Co., Two Rivers, Wis., has taken over the manufacture of hospital, dental and optical steel equipment formerly manufactured by the Albatross Steel Furniture Co., Los Angeles.

□ □ □

Watson-Stillman Co., Roselle, N. J., builder of hydraulic machinery and accessories, has appointed the Spalding Machinery Co. Inc., Engineering building, 205 West Wacker drive, Chicago, its sales representative in Chicago territory.

□ □ □

M. N. Landay Co., dealer in iron and steel scrap, rails and equipment, is moving headquarters from the First National Bank building, Pittsburgh, where it has been located for the past 19 years, to new offices at 1304 Clark building, Pittsburgh.

□ □ □

Maine Steel Products Co., South Portland, Me., has completed arrangements with Dominion Bridge Co., Montreal, Que., whereby the latter will build its products for distribution in Canada and the British empire. Production will be started on a special type of snow plow.

□ □ □

Hardie-Tynes Mfg. Co., Birmingham, Ala., and Virginia Bridge & Iron Co., Roanoke, Va., are working on a contract for gates and gate equipment on the intra-coastal channel being constructed by Louisiana and Texas at Harvey, La. The work requires about 1100 tons of steel shapes and castings.

□ □ □

Combustion Engineering Corp., New York, has been awarded a contract by the United States treasury department, Washington, for four 2500-horsepower Walsh-Weidner sectional header boilers and four multiple retort stokers, super-station type, for installation in the new triangle heating plant at Washington. This plant will supply heat for the new federal building development.

EDITORIAL

Let Your Congressman Know You Are Watching Him

ABOUT half of the income of the United States government is derived from income taxes. The other half is made up of excise taxes, customs receipts and a few smaller items. Income taxes—both individual and corporation—are borne by a few million citizens belonging to a class which is represented by the readers of a business paper such as STEEL. This group is destined to carry a large share of the federal tax burden.

Unfortunately this class is quite inarticulate in the halls of congress and in the public press. Yet of all groups that should be concerned in what congress does with public money, none has a greater interest at stake than the payers of income taxes. Now, more than in times of plenty, those who foot the bills should display deep interest in how their funds are employed.

The following is the approximate distribution of government expenditures for the fiscal year ending June 30, 1932:

Public debt:		
Principal	$411,000,000	
Interest	605,000,000	$1,016,000,000
War veterans		984,000,000
Army and navy		722,000,000
Government operating expenses		670,000,000
Miscellaneous:		
Public buildings, highways and works	528,000,000	
Postal deficiency	195,000,000	
Farm board fund	155,000,000	
Refund of receipts	91,000,000	969,000,000
Grand total		$4,361,000,000

In spite of the fact that war veterans already are receiving almost a billion dollars a year—a sum greater than the total cost of the army and navy—it is said that congress may pass legislation authorizing the government to pay out another two billion dollars in bonuses.

Could anything be more idiotic than this proposal at this time? When thinking ex-service men themselves are opposed to it, when balancing the budget is a question of greatest importance and when the President has firmly stated he will veto the measure if it is passed, why should members of the House and Senate take time from badly needed constructive work to make this future political gesture? Their threatened action is inexcusable folly and an affront to the intelligence of their constituents.

Next to the cowardly attitude of certain members in congress toward the bonus, the most pressing question in regard to federal expenditures is the equitable distribution of economies. Everybody agrees that government outgo must be slashed. Referring to the foregoing table, it is evident that the cost of public debt cannot be cut except by amortizing it. Payment to veterans probably cannot be reduced, but the cost of its administration can and should be. The current expense of national defense probably is reasonably low; to cut deeply in the face of present world conditions might invite trouble.

This brings us to government operating expenses, amounting to $670,000,000, or 15 per cent of the total. Most of the discussion of economy centers about expenditures in this small area, which covers the administrative costs of congress, the courts, departments, bureaus, commissions, etc.

Industry Wants Economies Based on Facts, Not "Wise Cracks"

For some reason that does not appear on the surface, certain newspapers are singling out the department of commerce from the scores of other units and are subjecting it to bitter attack. Because this department exists to serve industry, is headed by a secretary drawn from the presidency of a large industrial company, and has an enviable record for accomplishment, it would seem that it is the duty of industry to see that the department of commerce receives simple justice at the hands of those who revise the budget.

The department embraces 11 bureaus including that of foreign and domestic commerce, patents, census, mines, standards, etc. The department's budget is 1.2 per cent of the total federal budget. It is the smallest of all governmental expenditures for all purposes. The new budget presented by the department already has been cut about 10 per cent. In some divisions cuts as high as 25 per cent have been proposed. The department handles 12,000 inquiries about business daily. The bureau of foreign and domestic commerce returned to American firms more than $57,000,000 of business.

If you have the conviction that this service to business is worth more than it costs, warn your representatives in congress not to be swayed by irresponsible newspaper criticism or unwarranted oratory against "bureaucracy." The department, of course, must take its cut along with other branches, but it should not be sacrificed because of political "wisecracks."

At the same time, tell your congressman what you think of the bonus payment.

THE BUSINESS TREND

Business Is In State of Delicate Balance

ANXIETY and bickering over the distribution of the new burden of federal taxes, publication of depressing financial statements and the continued failure of industry to show signs of improvement are taxing the patience of business leaders. Throughout the first quarter many of them showed a disposition to put their faith in a slowly developing impetus in business, which they hoped would be fairly perceptible by the end of March. The power of the elaborate drive for credit liberalization was expected to assert itself before the quarter ended.

Now it is apparent that the obstacles in its path were greater than were anticipated. While the influence of the Reconstruction Finance Corp. was felt in banking circles and to a lesser extent in a few other directions, it has not been strong enough nor has there been time for it to penetrate far enough into the nation's economic structure to offset the constant demoralizing effect of continued adjustments.

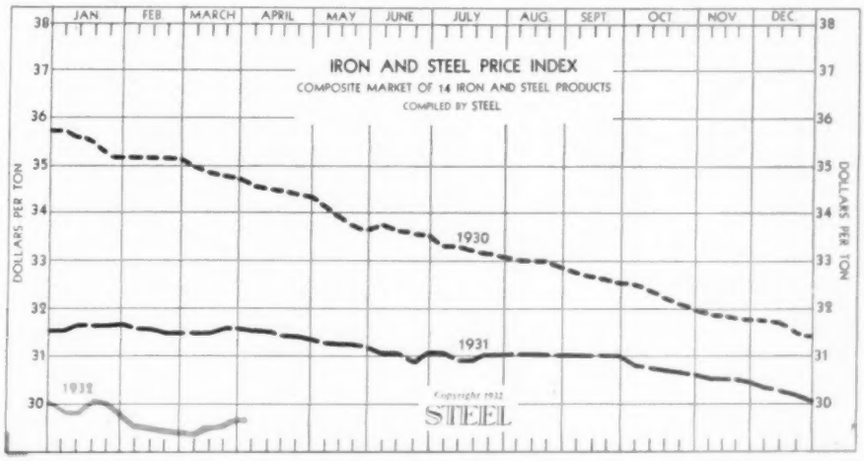
Stock market observers seem to be uncertain as to how much of last week's shrinkage in values was due to the actual state of business and how much represented the market's answer to the proposed tax on stock transfers. If every group affected by the new taxes indulges in tactics as childishly selfish as those exhibited in certain offices of Wall street, balancing of the budget will be delayed indefinitely.

An encouraging feature of the week in Washington is the apparent growing opposition to the payment of the soldiers bonus. It begins to look as if strong support may be mobilized to assist the President in his stand against this demand.

Automobile Shows Get Off To Good Start; Industry Awaits Results

It is still too early to appraise accurately the effect of the courageous drive of the automobile manufacturers for sales. Attendance at the General Motors, Ford and Chrysler shows has been gratifying. The early reports of orders booked were encouraging. However, the public will judge the results in terms of jobs rather than in the number of units sold. Steel companies and parts makers have felt a small improvement, but here again the element of delay is proving somewhat disconcerting.

Viewing the general outlook from a broad perspective, it may be said that business is in a state of delicate balance. A combination of unfavorable circumstances might easily throw it into a condition of confusion. On the other hand, a very slight favorable impulse—such as a fair demand for automobiles or a quick solution of the tax problem—might produce the spark that is needed to start business on a moderate upturn.



1932

Apr. 2	$29.81
Mar. 26	29.81
Mar. 19	29.57
Mar. 12	29.55
Mar. 5	29.53
Feb. 27	29.53

1931

Apr. 1	$31.67
Mar. 25	31.71
Mar. 18	31.71
Mar. 11	31.61
Mar. 4	31.61
Feb. 25	31.61

Shipments of Electrical Trucks Are Satisfactory

Although less than January, February shipments of electrical trucks and tractors were, with this one exception, the highest since September, 1931. However, the total of 26 units shipped during February was entirely domestic business. Department of commerce figures follow:

1931	Total	Shipment—Domestic	Export
January	38	33	5
February	56	50	6
2 mo.	94	83	11
March	93	84	9
April	71	48	23
May	69	69	.....
June	75	50	25
July	78	63	15
August	50	37	13
September	43	39	4
October	17	16	1
November	21	19	2
December	22	21	1
Year	633	529	104
1932			
January	29	29	.....
February	26	26	.....
2 mo.	55	55	.....

Trucks Gain but Total Auto Assemblies Ease

Truck production improved in February, but the gain was not enough to temper falling passenger-car assemblies and the month's output fell slightly beneath that of January. The two-month total for 1932 is off 40 per cent from the same portion of 1931, according to the department of commerce:

	—United States—			Canada
1931	Total	Passenger cars	Trucks	Total
Jan.	171,851	137,805	33,534	6,496
Feb.	219,939	179,890	39,520	9,871
2 mo.	391,788	317,695	73,052	16,367
Mar.	276,341	230,835	45,096	12,993
April	336,939	286,252	50,022	17,159
May	317,163	271,135	45,688	12,739
June	250,657	208,955	41,342	6,835
July	218,961	182,927	35,854	4,220
Aug.	187,197	155,321	31,772	4,544
Sept.	140,566	109,087	31,338	2,646
Oct.	80,142	57,764	21,727	1,440
Nov.	68,867	48,185	19,683	1,247
Dec.	121,541	96,753	23,363	2,432
Yr.	2,389,738	1,967,055	416,640	82,621
1932				
Jan.	119,344	98,706	20,541	3,731
Feb.	117,413	94,085	23,303	5,477
2 mo.	236,757	192,791	43,844	7,606

February Coke Rate Up

Total production of by-product coke for February was 1,995,780 net tons, an average of 68,820 tons per day. In comparison with the January average this is a gain of 1.5 per cent, but is still 33.5 per cent less than in February, 1931. Eighty-six plants operated during February and produced at about 40 per cent of their capacity, according to the department of commerce.

Malleable Founders' Operations Unchanged

Production of malleable castings varied little in February from January and operations of 130 plants reporting the following to the department of commerce were unchanged at the 23-24 per cent of capaicty rate:

1931	Output, tons	Shipments, tons	Orders booked, tons	Per cent operated
Jan.	31,665	31,893	33,098	31.4
Feb.	34,076	33,124	33,042	34.4
2 mo.	65,741	65,017	66,140	32.9
March	35,758	37,092	35,098	35.9
April	36,682	38,342	36,507	36.3
May	31,964	36,957	28,716	32.1
June	24,248	28,602	22,495	24.5
July	20,223	23,985	19,667	20.0
Aug.	18,821	20,904	18,705	18.9
Sept.	18,485	18,727	17,854	18.6
Oct.	20,444	17,802	18,558	20.4
Nov.	17,984	18,336	18,971	18.3
Dec.	21,503	20,206	19,811	21.5
Year	311,853	325,970	302,522	26.1
1932				
Jan.*	22,216	21,572	22,036	23.5
Feb.**	21,479	21,222	19,607	23.0
2 mo.	43,695	42,794	41,643	23.2

*Revised. **Preliminary.

Steel Plate Orders Are Slightly Heavier

Orders for refinery equipment and gasholders accounted for a small gain in steel plate total ordering in February over January. However, plates going into miscellaneous fabrication and oil storage tanks were in less demand. The department of commerce tabulation follows, based on reports by 51 manufacturers.

In Tons

1931	Total	Oil storage tanks	Blast furnaces	Miscellaneous
Jan.	27,518	2,598	111	20,845
Feb.	24,438	3,585	75	16,245
2 mo.	51,956	6,183	75	16,245
Mar.	31,056	2,538	833	21,697
April	29,916	7,749	25	17,783
May	26,210	2,411	230	20,370
June	22,806	4,679	356	15,817
July	27,261	4,136	51	18,785
Aug.	24,282	1,138	125	18,331
Sept.	33,473	4,024	254	18,692
Oct.	20,839	1,955	200	16,336
Nov.	18,268	1,755	401	15,058
Dec.	16,442	778	86	13,891
Year	302,509	37,346	2,747	213,850
1932				
Jan.	17,613	4,783	129	12,124
Feb.	17,755	4,115	40	11,777
2 mo.	35,368	8,898	169	23,901

Babbitt Metal Output Reflects Auto Production

January's stemming of the late 1931 decline in the production of babbitt metal was not long-lived. Debabbitt metal was not long-lived. Declines of February were apduction, according to department of commerce compilation which follows:

In Pounds

1931	(a) Total production	(b) Sales	(c) Production for own use
Jan.	2,855,693	2,089,574	766,119
Feb.	2,507,222	1,819,749	687,473
2 mo.	5,274,462	3,820,870	1,453,592
March	2,661,211	1,829,477	831,734
April	2,560,243	1,844,311	715,932
May	2,408,781	1,678,204	730,577
June	2,306,940	1,605,009	701,931
July	1,931,685	1,420,265	511,420
Aug.	1,780,900	1,376,692	404,208
Sept.	1,851,956	1,355,415	496,541
Oct.	2,047,100	1,495,185	551,915
Nov.	1,846,069	1,239,032	607,037
Dec.	1,624,419	1,047,607	576,812
Year	26,020,025	18,438,326	7,581,699
1932			
Jan.	1,743,837	1,281,294	462,543
Feb.	1,577,017	1,142,813	434,204
2 mo.	3,320,854	2,424,107	896,747

(a) By 43 plants. (b) By 33 manufacturers who produce for sale, including 5 who also report consumption of own metal. (c) By 15 establishments which manufacture their own metal, including 5 which also produce for sale.

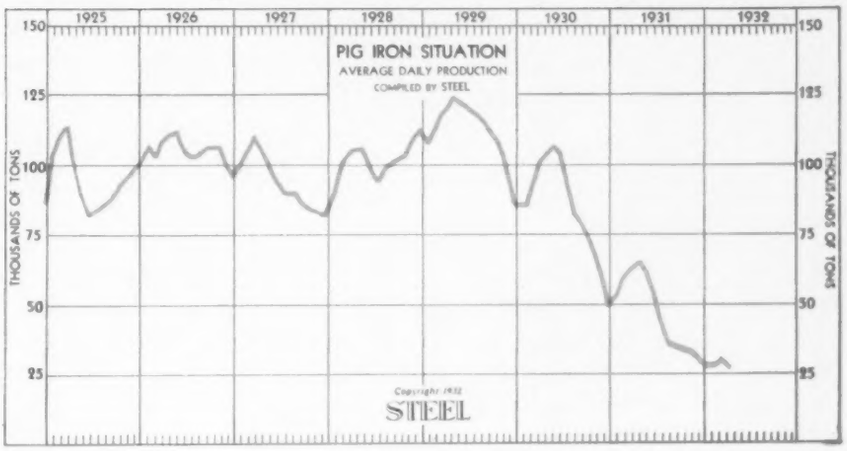
Structural Steel Sales Are Better in February

Both orders and shipments of fabricated structural steel improved in February over January. Orders improved to 15.6 per cent of capacity, shipments to 19.6 per cent. The following figures are an estimate, based on actual report to the department of commerce.

	Bookings		Shipments	
1931	Tonnage	Per cent of capacity	Tonnage	Per cent of capacity
Jan.	158,000	39.5	164,000	41.0
Feb.	158,800	39.7	159,600	39.9
2 mo.	316,800	39.6	323,600	40.5
Mar.	178,800	44.7	149,200	37.3
Apr.	284,800	71.2	158,800	39.7
May	152,400	38.1	145,200	36.3
June	172,400	43.1	159,200	39.8
July	159,600	39.9	180,800	45.2
Aug.	124,000	31.0	167,600	41.9
Sept.	194,400	48.6	149,200	37.3
Oct.	109,200	27.3	143,600	35.9
Nov.	90,800	22.7	111,600	27.9
Dec.	97,600	24.4	122,800	30.7
Total	1,880,800	39.2	1,811,600	37.7
1932				
Jan.*	48,400	12.1	65,600	16.4
Feb.	62,400	15.6	78,400	19.6
2 mo.	110,800	13.9	144,000	18.0

*Revised.

	1932	1931
March	30,919	65,448
Feb.	33,122	61,114
Jan.	31,336	55,337
	1931	**1930**
Dec.	31,694	53,732
Nov.	36,727	62,128
Oct.	37,831	69,851



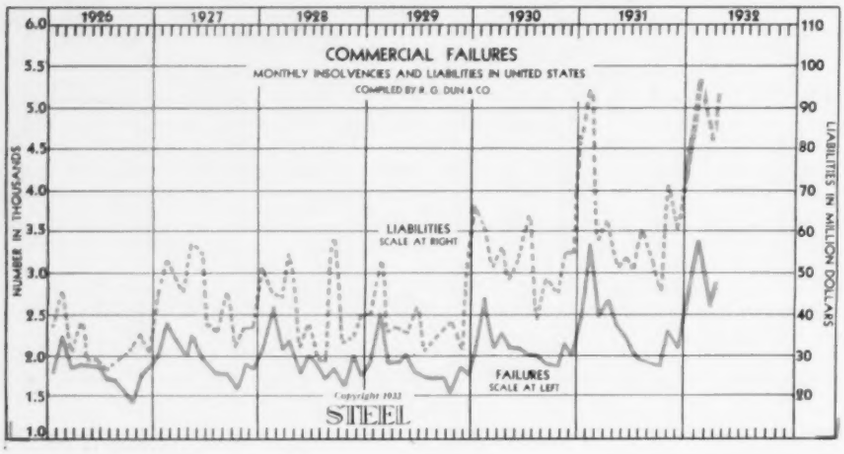
Decline in Pig Iron Production Is Smallest Since August, 1921

With an average daily rate of 30,919 tons in March, pig iron production was 2203 tons or 6.6 per cent less than the 33,122-ton rate of February and was the lowest since August, 1921 when the average stood at 30,802 tons. The all-time low was established in July, 1921, with 27,892 tons. Active blast furnaces which had increased from 61 in January to 64 in February, dropped to 60 on March 31. Relating production to capacity, the operating rate of March was 21.4 per cent, compared with 23.0 per cent in February and 21.8 per cent in Januray. During the first quarter of this year, production has aggregated 28,90.467 tons, or 48 per cent below the 1931 first quarter figure of 5,455,541 tons.

Freight Car Orders Gain, But Totals Are Far Below Normal

Awards for domestic freight cars in March totaled 105 cars, a faint recovery from the low of 35 cars made in February and a negligible total as compared with March last year when awards amounted to 2166 cars. During the first quarter of this year awards have aggregated only 299 cars compared with 2316 for the same period last year, 28,217 for the first quarter of 1930 and 41,163 in the same period of 1929. Activity in recent months has been as low as in the slack months of 1921, and although freight traffic during the past months has shown some increase, railroads still have sufficient available equipment in good condition to meet their traffic requirements.

	1932	1931
March	105	2,166
Feb.	35	50
Jan.	159	100
	1931	**1930**
Dec.	11	2,729
Nov.	35	2,621
Oct.	780	4,116
Sept.	503	576



Liabilities

March, 1932	$93,760,311
Feb., 1932	84,900,106
March, 1931	60,380,000

Number

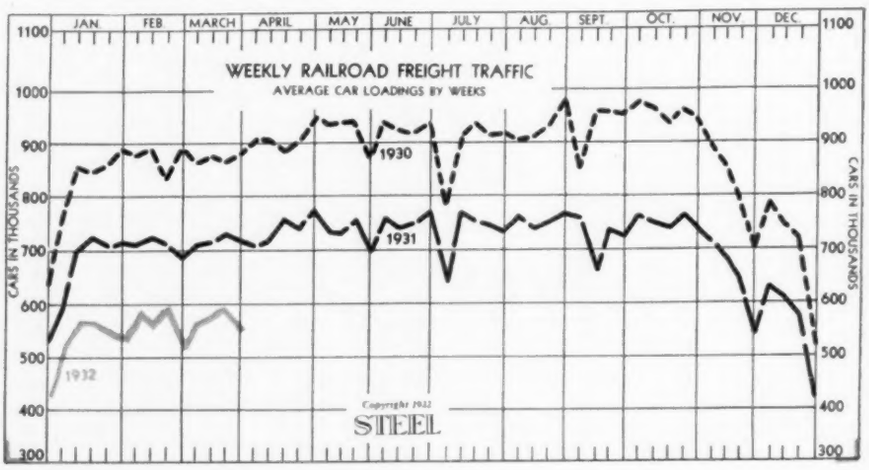
March, 1932	2,951
Feb., 1932	2,732
March, 1931	2,604

Commercial Failures Increase in March; Liabilities Are Higher

Insolvencies in March outnumbered those of any preceding March on record with a total of 2951. The current figure exceeds the total for March 1931 by 347 and the total for the third month of 1930 by 304. Insolvencies for the first quarter of 1932 total 9141 as compared with 8483 for the same period in 1931. According to statistics compiled by R. G. Dun & Co., liabilities in March aggregated $93,760, 311, compared with $60,380,000 in the corresponding month a year ago. The total indebtedness for the current month was exceeded in March, 1924, when the total was 97,651,026. Liabilities for the three months total $275,520,622 as compared with $214,602,374 during the first quarter of 1931.

Freight Traffic Falls Back In Final Week of March

After showing increases for three consecutive weeks, revenue freight car loadings declined 23,516 cars, according to the American Railway association. The total for the week ending March 26 was 561,118 cars, virtually returning to the same level as in the opening week of the month. Car loadings were 740,079 in the same week of 1931 and were 885,324 in the same period of 1930. Forecast has been given by the Shipper's Regional Advisory board that carload shipments of the 29 principal commodities will be about 13 per cent lighter in the second quarter this year than they were in the like three months of 1931. Coal loadings accounted for 117,122 cars this last week.



	1932	1931
March 26	561,118	740,079
March 19	584,634	744,253
March 12	575,481	733,580
March 5	559,439	723,215
Feb. 27	535,498	681,221
Feb. 20	572,606	713,156

All-Steel Auto Bodies Are Flash Welded

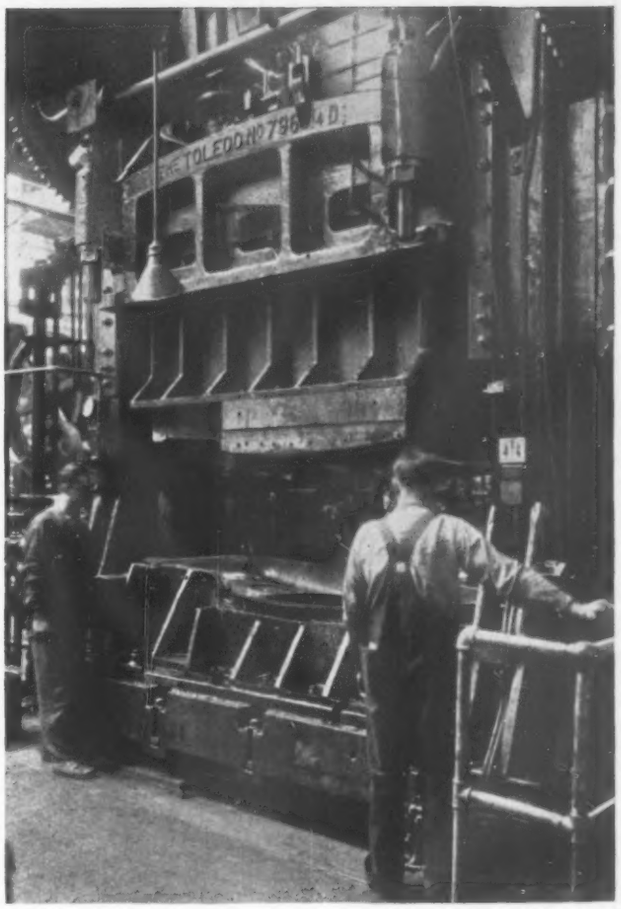
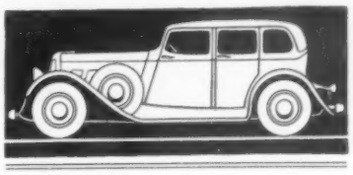


FIG. 1—Large presses of this type were developed to form the entire side panel of an automobile body in one stroke. Note the massive dies, proper design of which was essential to successful stamping

ALL-STEEL monopiece bodies are used in the construction of many of the 1932 automobiles and while assembly of these bodies has slumped somewhat in the past two years, the intensive sales drives which automobile builders are featuring will, it is hoped, furnish a stimulus that ultimately will be felt by body builders. Production of monopiece bodies is carried out on a large scale at the Philadelphia plant of the Edward G. Budd Mfg. Co., which occupies a floor space of 3,000,000 square feet and at its peak employs 10,000 men.

Bodies are fabricated from special automobile sheets received in carload lots at one end of the plant where they are started through a succession of highly specialized operations including stamping, forming, welding, assembling and testing. Completed bodies are shipped out at the opposite end of the plant. Overhead monorail conveyors carry the parts in process quickly from one operation to the next and welding in various forms speeds up the production rate. Welding, in fact, is indispensable in the Budd method of building one-piece bodies. Spot welding is used for assembling all small parts on the inside of the body and flash welding is used for joining the formed sheets of the outside of the body to give a smooth homogeneous appearance. After such an outside flash weld has been smoothed down and the body finished it is practically impossible to detect its location, and in strength as well as appearance these flash welded joints are the equal of the original sheet.



Development of the monopiece body construction has had an interesting parallel in the production of steel sheets. At first it seemed impossible to obtain a sheet which would take the required deep drawing without annealing between operations and at the same time have a surface hard enough for the high gloss enamel finish. Finally when the producers and the manufacturer had solved this problem a new problem appeared in connection with the size of sheets. The development of large presses, such as shown in Fig. 1, to form the full sides of automobile bodies brought a demand for larger sheets. This demand was met in two ways. Larger rolls were built for rolling wide sheets and two or more small sheets were butt welded by the flash method to form a large sheet. The Budd com-

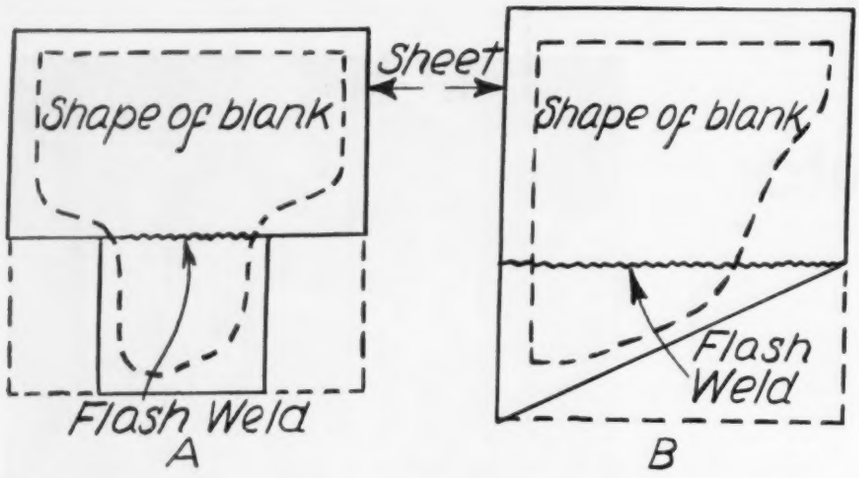


Fig. 2—Sketches showing how smaller steel sheets are flash welded to full-size sheets for blanking shapes which are larger than the one full-size sheet

pany now uses both types of large sheets. The welded or built up sheet often proves economical through the saving of metal on irregular outline stampings. One method of doing this is shown at *A* in Fig. 2 where a large and small sheet are joined to save the unneeded material at the corners which otherwise would have been trimmed off as scrap and salvaged only with difficulty. In some cases it was found possible to cut the smaller sheet on a diagonal using one-half with one larger sheet and the other half with another large sheet, as shown at *B* in Fig. 2.

Many Variables Present

Supporting the present successful method of flash welding is an enormous amount of research work and testing. The actual operation seems simple, but it is only simple because of the accurate determination of all of the variables such as voltage, amperage, time for current to be applied, distance between sheets during flash periods, movement of sheets during welding and degree of pressure to be applied.

In brief terms the flash welding of two sheets consists of holding the two sheets in butt position and slightly separated by a space which is a little wider at one end than at the other. A current of high amperage and low voltage is then turned on and a flash started at the narrow end of the opening. This flash quickly spreads throughout the entire length of the joint and is held until the edges reach the proper welding temperature. At this point the current is interrupted and the sheets are moved together with a quick positive motion which spreads out the metal of the initial contact at the edges to form two beads, one on each side of the joint. At the same time this brings together beneath these beads the soft undisturbed metal of the sheets back of the edges. Thus a protected, unembrittled weld is formed beneath the beads which themselves are hard and brittle. One or both beads may be removed after welding if desired. Usually the bead on the surface which is to be exposed in the body unit is cut flush with the sheet surface by means of a shearing machine. This leaves the inner bead as reinforcing and as already explained it leaves a joint which when finished cannot be detected on the outside and which, because it is thicker, is actually stronger than the base metal of the sheet.

The shearing machine was designed especially for this particular job of removing beads. The operation is simply that of drawing a sheet in the direction of the joint over a steel table and beneath a shear knife which cuts through the soft metal at the base of the bead. The sheet is held in position at the point of cutting by rollers.

In addition to careful control of the flash weld variables as noted, it is important to have the sheets in absolute alignment throughout the full length of the joint at the time of welding and this is insured only through the use of elaborate specially-built welding machines. For a straight-line weld of considerable length the machine is elaborate enough, but when the weld is made on a curve as between the rear and side elements of a body, the machine becomes complex indeed. Such a machine is shown in operation in Fig. 3. This machine is used for making some of the joints indicated by the layout in Fig. 5, which shows the four major parts of a typical steel automobile body before assembling by flash welding.

Alignment Controlled Closely

The accuracy in the construction of these elaborate machines may be judged from the fact that the sheets are held in alignment at all points throughout the entire length of the joint within a variation of plus or minus 0.002-inch.

The elaborate nature of some of the large dies is indicated in Fig. 4 which shows a milling operation on a body side section die. For deep drawing, the correct design and construction of dies is all important and the Budd company, realizing this, has established a well equipped die producing and maintenance department. Engineers of the company have stated that in many cases where difficult problems were encountered a slight alteration or modification made by a master die mak-

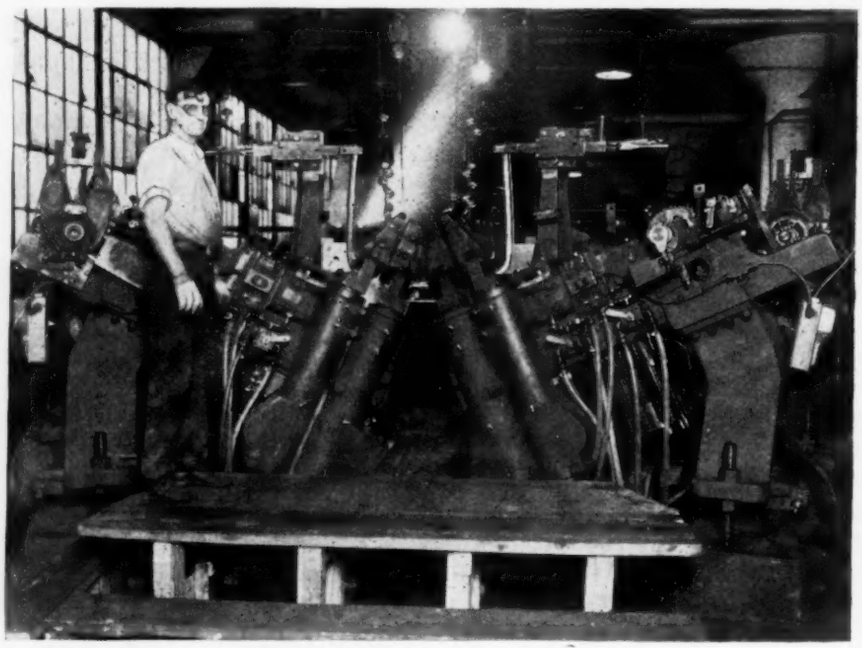


Fig. 3—Front view of strand shroud flash welder in which body elements are clamped and welded

er has turned the trick. For example, difficulty with cracking at corners is sometimes overcome by increasing the clearance between the die blocks so that the metal is free to flow naturally at this point without undue stressing. Other difficulties such as buckles, spring backs, etc., also must be corrected.

300 Joints Eliminated

Just as the early design of automobile followed closely the previous design of horse drawn vehicles the early steel bodies closely followed previous wooden construction. New designers are fully aware of the great possibilities of steel, and automobile bodies are beginning to reflect the new type of construction. The present welded all-steel body has eliminated more than 300 joints which appeared in the early steel body. The most recent design feature, as exemplified in the monopiece body, is a combination body and chassis which has reduced height and at the same time increased strength of the unit and bettered the performance of the car.

Whenever a new design or a new method of construction is put into effect the complete body is given a series of rigid tests to discover and remedy weaknesses before the bodies go into actual production. In order to give such tests special machines have been built and many unusual tests have become part of the regular manufacturing procedure.

The M. A. Hanna Co., Cleveland, suspended exploration work at the United States copper property, Clifton, Ariz., March 1. Diamond drilling was done. A. E. Walker supervised the work.

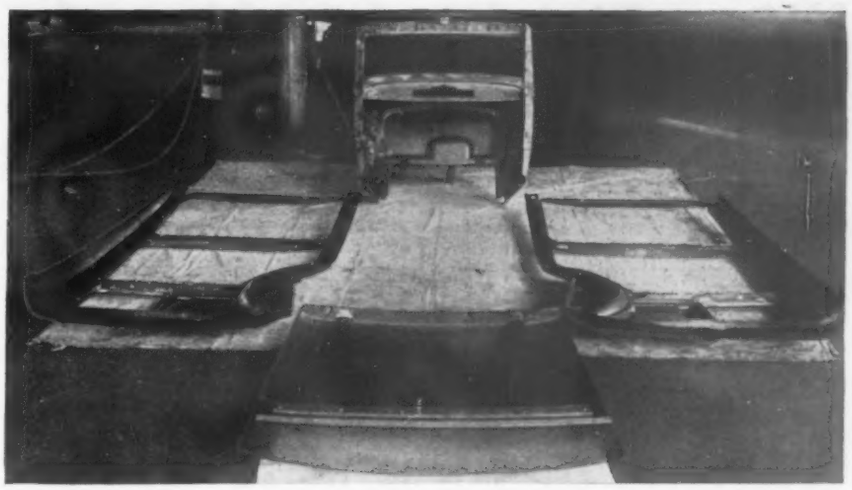


Fig. 5—Front, rear and two side panels which are flash welded together to form the monopiece all-steel automobile body

Applied Research Proves To Be Sound Investment

In a normal year it is estimated that 10 million dollars is spent in pure scientific research, a program which requires the services of 3000 workers, 80 per cent of whom are in universities and other educational institutions. In addition, it is estimated that industry spends 200 million dollars in applied research and engages 30,000 workers. Of the latter expenditure, 20 million dollars is believed to be spent for metallurgy and investigations in alloys.

These figures were revealed by Dr. O. E. Harder, assistant director, Battelle Memorial institute, Columbus, O., in addressing the Cleveland chapter of the American Society for Steel Treating, April 4, on the subject of "Metallurgy of Yesterday, Today and Tomorrow."

The speaker stated that one large metal using company had at one time an annual budget of 19 million dollars and was employing 3000 research workers. Of the total budget, 6 million dollars was expended in research and the estimated return was 60 million dollars, a ratio of 10 to 1.

Dr. Harder advocated more co-operative research and a wider participation of educational institutions in applied research programs.

New officers for the Cleveland chapter were elected as follows: Chairman, Kent R. Van Horn, research metallurgist, Aluminum Co. of America; vice chairman, E. F. Ross, associate editor, STEEL; and secretary-treasurer, H. B. Pulsifer, metallurgist, Ferry Cap & Set Screw Co.

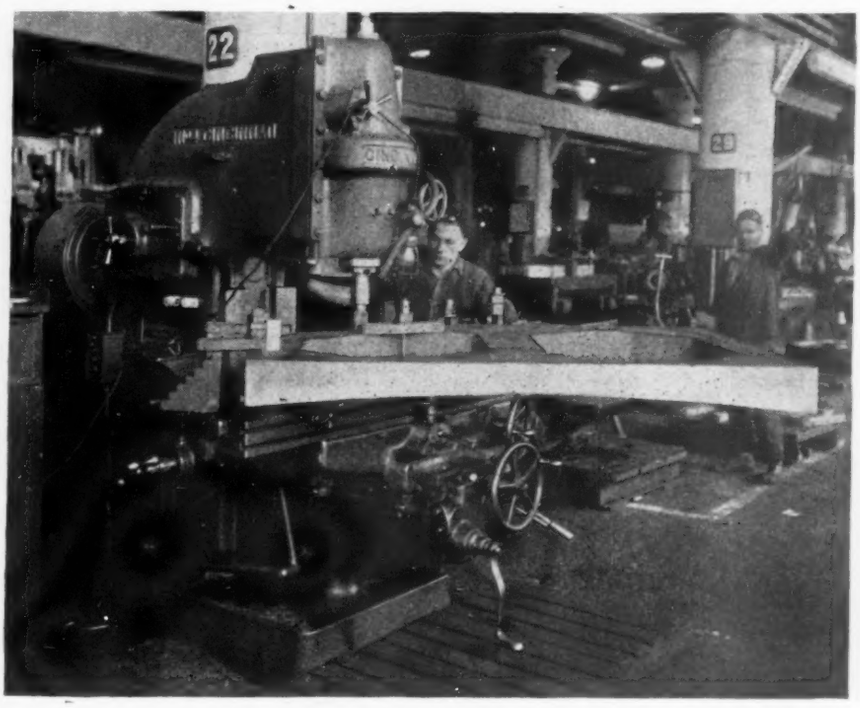


Fig. 4—Vertical milling operation on bottom block and large side panel monopiece die

Seeks Approval of Revised Grinding Wheel Standard

A proposed simplified practice recommendation R45-28 on grinding wheels is being submitted by the division of simplified practice, bureau of standards, Washington, to manufacturers, distributors, users and others interested in simplification of grinding wheels for acceptance.

The present simplified practice became effective on Oct. 1, 1928, but experience during the succeeding three-year period indicated the necssity for a further rearrangement of the tables listing standard wheels of various types to make the locating of any particular wheel more convenient. It was also found desirable to add certain new wheel sizes.

Wage Plan Involves Unit of Labor Measurement

BY R. C. COOPER
Engineer, Charles E. Bedaux Co., New York

A LABOR measuring system which has met with approval of both management and employes has been installed at the plant of the Lukens Steel Co., Coatesville, Pa. Self policing, in that the workers are given a base rate of pay plus premiums for production over the minimum amount, the effect of the system is to give higher pay to the workmen and at the same time to reduce the company's labor cost per unit of production.

The system was installed by the Charles E. Bedaux Co. of New York Inc., 22 East Fortieth street, New York. The unit of labor measurement is designated as the "B," this unit being defined as the amount of work an operator will do in one minute while working at a normal speed and taking normal relaxation. The amount of relaxation necessary for different steel mill operations may vary from 10 to 100 per cent of the normal working time, depending upon the effort required on the particular assignment.

Equitable Compensation

Establishment of a labor measure which compensates for these variations in effort, provides a common yardstick with which the performance of individual operators or groups may be compared on an equitable basis. For example, the labor performance of an open-hearth charging crew may be compared to the performance of a plate mill shearing crew, or to a group of machinists, gas cutters, or electric welders.

Since the B unit represents a normal minute's worth of work, 60 B's is a normal hour's worth of work. Under this measure, the different operators are paid an established hourly rate, dependent upon the skill required for their respective operations. For all over 60 B's per hour, the operator receives premium in addition to the base rate.

With this incentive afforded, it has been found that an average group of workmen will come to an 80 B-hour average at which point their earnings are 25 per cent over their hourly or base earnings. The operators are credited for all interferences and delays over which they have no control, this serving the dual purpose of protecting operators' earnings and isolating losses. A study of these losses affords management a detailed picture of what is going on in the plant and gives a ready figure of savings to be realized by the elimination of the losses.

At present steel mills are operating under some form of labor incentive and it is natural that the most commonly used plan is linked with the steel mill unit of production, the ton. A flat rate per ton or combination of hourly rate plus a rate per ton are the forms of incentive most common. Since steel mill operations consist mainly of the work of reducing, sizing, shaping and handling steel, the tonnage plan of wage payment often may be inconsistent with the work involved due to the varying amounts of effort required.

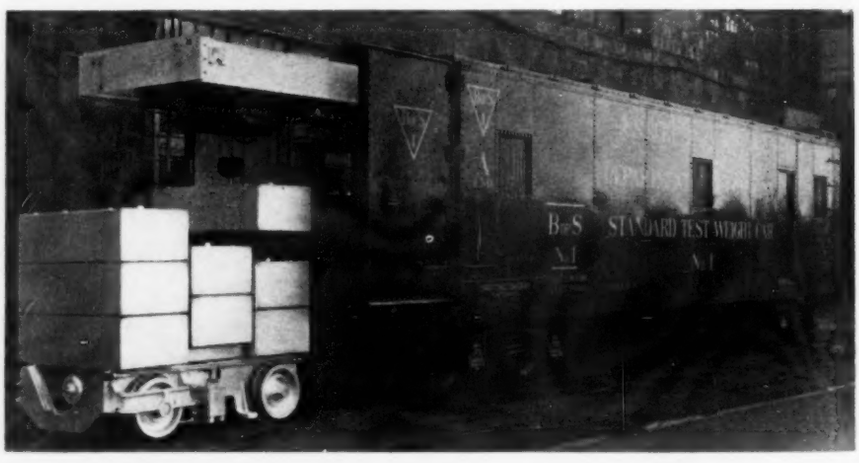
For example, with a given ingot or slab size, more work is required to roll a ton of ¼-inch plate than to roll a ton of ½-inch plate. For a given weight of plate, more work is required to roll a ton of ¼-inch plate if the ingot or slab weight is 5000 pounds than to roll a ton of 1-inch plate if the ingot or slab weight is 10,000 pounds. For a given weight and gage of plate and a given ingot size, more work is required to roll a ton of some alloys than to roll a ton of ordinary tank or structural steel.

Failure to compensate in the tonnage rates for all these variables results in rates inconsistent with the work involved. Oftentimes clerical expense so to compensate on the tonnage basis is prohibitive. As a direct result, labor cost for some particular product is excessive because labor rates are too high, and for others the labor costs are unsound because they are based on wage rates that are too low.

A condition such as this tends to destroy the operator's incentive to produce, because his earnings are not necessarily commensurate with his efforts. In many instances it has been found that this condition has produced a counter effect and resulted in excessive losses due to the fact that some low paying types of work have been neglected.

Inequalities Arise

As an illustration of this point, it is only natural that operators in a plate mill heating department who are being paid a flat rate per ton of plate finished during their shift will tend to draw the larger and heavier ingots or slabs and neglect the lighter ingots or slabs because it is to their financial advantage. Also under these conditions the operators may tend to concentrate on drawing and neglect charging during the latter part of each shift as they derive no financial benefit for this part of their work. Such tendencies may result in excessive heating costs and delayed shipments. It may be said that elimination of these faults in operation is the duty of supervision, but during the application of the new system in the Lukens



NEW CAR FOR TESTING TRACK SCALES: Recently completed in the shops of Baldwin-Southwark Corp., Philadelphia, for the account of A. H. Emery Co., Stamford, Conn., this railway track scale testing car for the bureau of standards, Washington, carries nine 10,000-pound weights, a 2500-pound weight and an auxiliary truck weighing 7500 pounds, all calibrated to within a few ounces of these ratings. Inner construction of the car is of steel castings and structural shapes; exterior is of sheet steel. Under the roof is a crane runway on which is mounted a movable framework which can be extended as shown. An electrically driven 5-ton crane operates on this framework and handles weights from the car to the scales or to the auxiliary truck. Power for the truck and crane is furnished by a small gasoline driven generator

plant, management has found this elimination can be accomplished best by providing operators with a measure of work which truly reflects their effort and an incentive which gives them the security that their earnings will be proportional to that effort.

In this particular case it was found from the new time study that the true measure of work performed during a shift could be expressed in terms of the number of ingots or slabs charged and drawn. B values were established for charging and for drawing each different weight of ingot or slab. Operators of the department receive credit for both charging and drawing. Since they receive credit for charging as well as drawing their incentive is to draw as many heats as possible and in each case immediately to recharge. On this basis their earnings are directly proportional to their efforts, and are not affected by the size of product being handled. Application of this measure has resulted in enormous labor savings, increased hourly earnings by operators and increased output of the department.

The Bedaux system of measure in the steel mill provides labor with an assured hourly wage for which management receives a just and fair return. In addition to the security of a fixed hourly wage, labor has every incentive to produce at a high rate because premiums are proportional to effort expended. B values, or time allowances, once established, are guaranteed against change as long as methods and equipment are the same; changes in method or equipment necessitate the establishment of new values, consequently the plan once set up is continually brought up to date.

Common Objective

Individual operators or groups of operators are able to demonstrate to management their real worth through daily and weekly reports and management is informed by means of the common yardstick of those departments which require attention and improvement. Management and labor are brought together with the common objectives of maximum production at minimum cost. In steel mills where large sums of money are invested in equipment and material, this is of paramount importance. The new system is a tool to this end and is useful insofar as it is used intelligently.

All-Steel Construction Used in New Diesel-Electric Power Barge

AN ALL-STEEL riveted floating electric power plant is in successful operation drilling oil wells in the bayous and marshes of southern Louisiana along the Gulf coast. The barge ENERGY was designed and built at New Orleans under the direction of engineers of the Texas Co. It operates under diesel-electric power which, while not new in oil drilling, is a new adaptation in a floating power plant for under-water drilling.

The first well for which the plant supplied power is located on Bayou Lafourche, 50 miles south of New Orleans, being completed at a depth of 3628 feet. Wells in this region often are attempted 40 to 50 miles from a dry land base, the project being entirely a marine operation from driving piling to the building of mats and timber foundations for support of derrick, tanks and machinery. The crude oil is removed from the well to the shore by barge.

In planning a floating power plant for this work, first consideration was given to the elimination of steam power, with its attendant expense brought about by high costs of fuel transportation and excessive boiler repair cost caused by lack of good water.

The ENERGY, shown in the accompanying illustration, carries a twin power plant generating 485 horsepower, considered by experience to be ample for drilling a 6000-foot well. Each power unit is mounted on a steel sub-base, holding parts in alignment and distributing the 13-ton load over the hull framing. Each unit consists of a six-cylinder full diesel marine engine driving through flexible coupling a 175-kilowatt three-phase alternator with direct-drive exciter, furnishing 60-cycle current at 480 volts. The power supply was divided into two units, as one is sufficient for early stages of drilling, the second being kept in reserve. Auxiliary equipment is practically entirely electrically driven, including pumps, air compressors and centrifuge for cleaning the crude oil fuel.

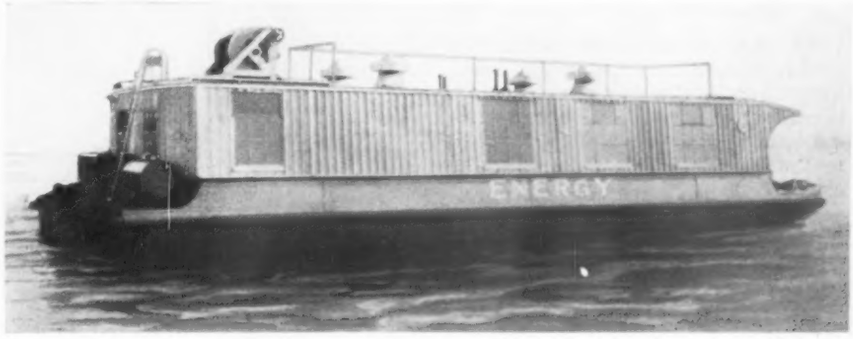
Transmission of power from the barge to the drilling rig required precautions against the possible ignition of gas encountered in drilling. This was accomplished by locating the barge approximately 200 feet from the well and by using oil-immersed switches and gas-proof motors.

Bridging the gap between the barge and the well presented a problem, since it was desired to eliminate power loss as much as possible and retain flexibility in handling the equipment. Stranded copper core cable, 1¼ inches in diameter and containing 427 strands, was selected. The cable is covered with double thickness of rubber insulation, vulcanized in place, forming a one-piece rubber covering ¼-inch thick, flexible, tough and waterproof. Three conductors are required and since it was not feasible to make three of this size into a single cable, they are twisted together, total weight being about 3500 pounds.

Electric Welded Bulkheads

Space in the barge hull under the forward and after decks is separated from the rest of the barge by steel bulkheads, electrically welded to the hull plating, forming bunkers in which 200 barrels of fuel oil may be stored, sufficient for a straight run of 20 to 30 days. These bunkers are filled through openings in the deck. Every precaution has been taken to render the plant fireproof; the use of wood has been kept to the very minimum and fire extinguishers are placed at convenient points about the craft. The barge hull is surmounted by a galvanized iron superstructure with walls sloping inward, enclosing the engine room and living quarters.

Engines start from cold at once by manipulation of a single switch to admit starting air. A power unit can be placed on the line within 2 or 3 minutes, thus permitting intermittent operation of the power supply if desired. Although initial cost of the equipment is relatively high, it is claimed that it will save enough expense in the drilling of a few wells to balance the initial expenditure.



New all-steel barge equipped with twin diesel-electric power plants, supplying power for under-water oil well drilling

WITH this electric arc saw, the wheel serves as one electrode and the work the other. The wheel, revolving at high speed, presents continuously a new and cool surface to the work. The type of wheel depends upon the material to be cut; for mild steel, a steel wheel is used

Develops Revolving Electric Arc Saw To Cut Steel; Operation Is Simple

A SAW which cuts steel by means of the electric arc rather than teeth has been developed by the Electric Arc Cutting & Welding Co., 152 Jeliff avenue, Newark, N. J. The equipment is shown in operation in the illustration above.

The cutting wheel constitutes one electrode and the work to be cut the other electrode. Several hundred amperes at a low voltage pass between the cutting wheel and the work, and with the wheel revolving, a new and cool surface is presented to the work continuously. Alternating or direct current may be used, although alternating is favored because with it the high amperage and low voltage required is more easily obtained.

Wheel Diameter Increases

An interesting feature is that the wheel, instead of wearing out, gradually increases in diameter. This is because particles of the steel being cut attach themselves little by little to the cutting wheel, making it necessary to shave the wheel to its original dimensions from time to time. For cutting mild steel, a steel wheel is used; for certain types of alloys, carbon, carborundum and copper alloy wheels have been found suitable for use.

The wheels are driven rapidly—above 1800 revolutions per minute—and results improve as wheel speed increases. It is desirable to drive the wheel by belt so that in case of momentary sticking, the belt will slip a little and thereby free the wheel.

With a license from the manufacturer anyone operating a welding equipment can cut with the apparatus, or the maker can supply the apparatus complete with a transformer.

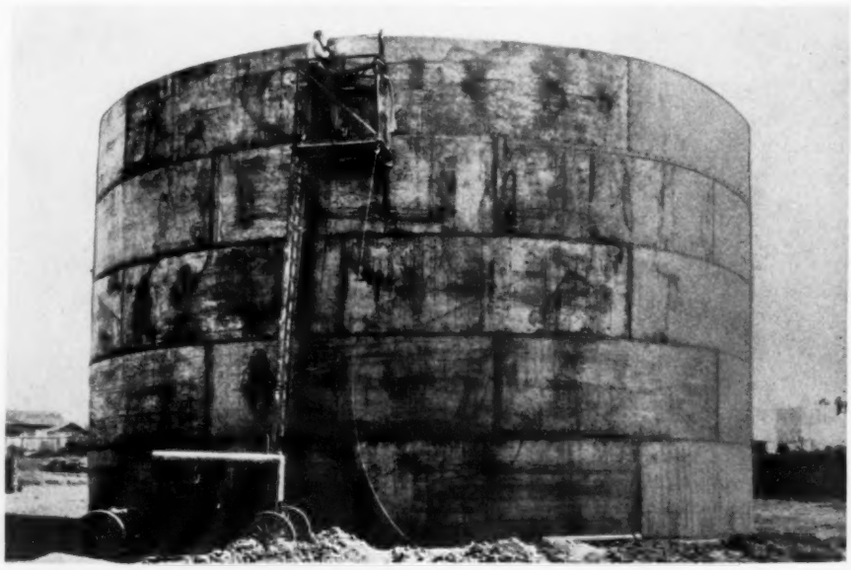
Electric Heat Is Subject Of Cleveland Meeting

A meeting devoted to industrial electric furnaces wil be conducted by the Electrical Maintenance Engineers' association at Guild Hall, Cleveland, April 13. Participating organizations will include the American Society for Treating, Cleveland Engineering society and Society of Automotive Engineers.

Three papers have been scheduled as follows: "Electric Heat in Industry," by Dr. Zay Jeffries, consulting metallurgist, Cleveland; "Controlled Atmospheres in Electric Furnaces," by H. J. Babcock, industrial heating specialist, General Electric Co., Schenectady, N. Y.; and "Economics of Electric and Fuel Furnaces," by Wirt S. Scott, industrial heating specialist, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Produces New Thin-Walled Heat-Resisting Tubing

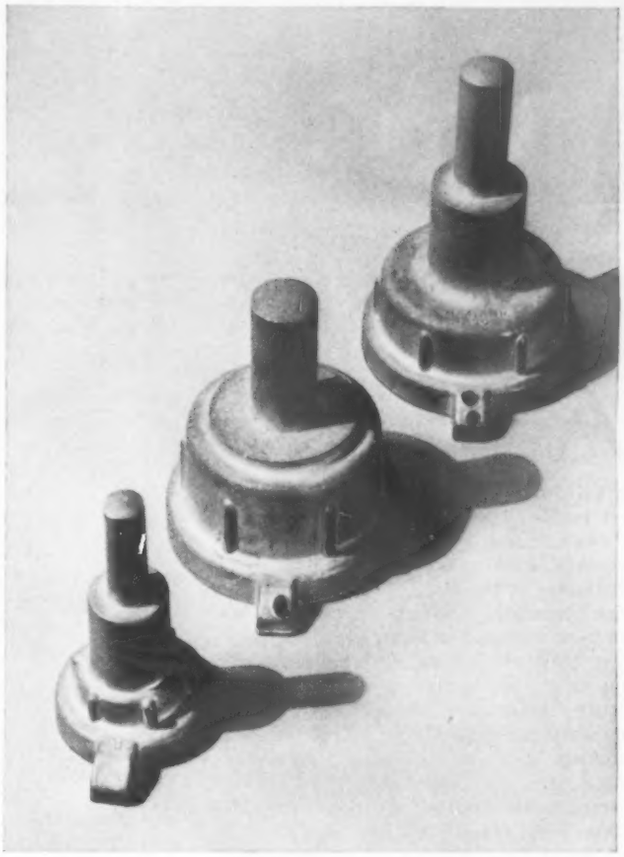
As a result of extensive research work, Driver-Harris Co., Harrison, N. J., has placed on the market welded Nichrome thin-walled tubing which is guaranteed pressure tight. This tubing is furnished in any length up to 12 feet and its principal use is a container for annealing long narrow steel sections in a reducing atmosphere. It is employed also in superheaters and in applications where a tube or pipe is required to withstand high temperatures.



MODERN OIL RESERVOIR OF WELDED STEEL PLATES: A 20,000-barrel oil storage tank recently erected at Corpus Christi, Texas. This job was fabricated entirely by welding, using the electric arc process of the Lincoln Electric Co., Cleveland

Find out if it Pays

Revere Brass Forgings can serve you better and save you money



Three out of a long list of electrical parts made with Revere Brass Forgings . . . selected for higher conductivity, less weight, better appearance, economy and oil-tightness. Other Revere products include: Brass Rod, Extruded Shapes, Welding Rods, Anodes, Drawn Shapes, etc.

Revere Brass Forgings are being used for a large (and increasing) list of parts by one of the country's leading electrical manufacturers.

The principal advantages of these forgings over castings (according to the long experience of this Revere customer) are:

HIGHER CONDUCTIVITY . . . Revere Brass Forgings have higher conductivity than the same alloy cast. Higher, in fact, than any cast brass alloy now known. This is an important factor to this user.

LESS WEIGHT . . . Revere Brass Forgings, being twice wrought, have great tensile strength. They are accurately forged. For these reasons the weight of parts can be appreciably reduced.

LEAK-PROOF TO OIL . . . Many parts used in the electrical industry must be leak-proof to oil. Castings are often useless because of their porosity. Whereas not one Revere Brass Forging has leaked oil.

BETTER APPEARANCE . . . Where parts (such as the terminal caps illustrated) are used in a conspicuous place and appearance counts, Revere Brass Forgings are preferred, because of their better looks and finish.

ECONOMY . . . Lighter weight, accurate dimensions, less machining, greater strength, longer life . . . no wonder Revere Brass Forgings reduce costs.

Whether or not you are an electrical manufacturer, you can profit by the advantages of Revere Brass Forgings. Many leading concerns in other lines . . . such as washing machines, valves, refrigerators . . . have found the quality and economy of Revere Forgings profitable.

For further information, address Revere Copper and Brass Incorporated, 230 Park Avenue, New York City.

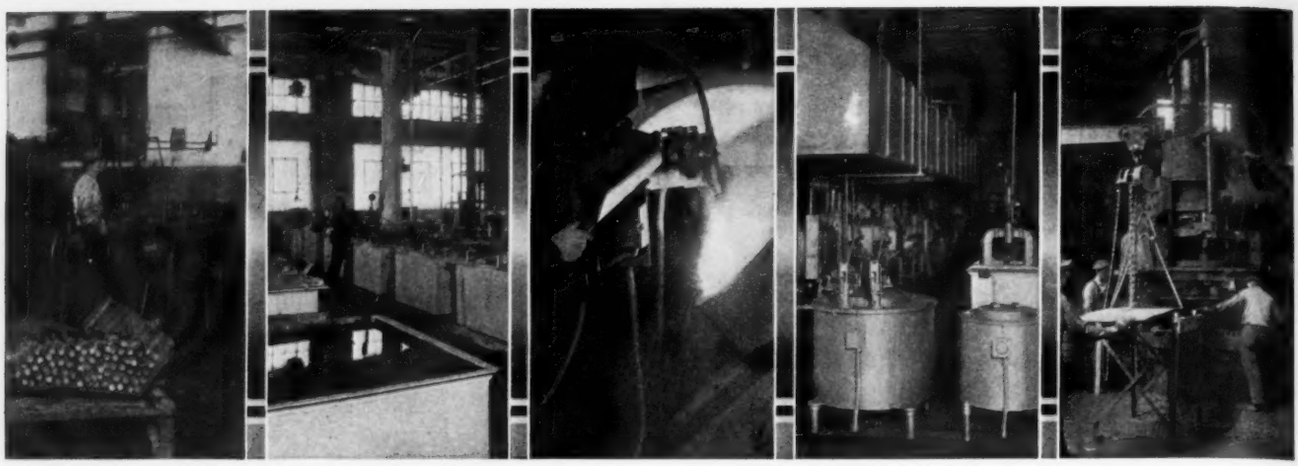
Revere Copper *and* Brass

INCORPORATED

Revere COPPER BRASS Products

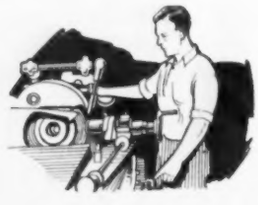
Baltimore *Division, Baltimore, Md.* Michigan *Division, Detroit, Mich.* Higgins *Division, Detroit, Mich.*
Dallas *Division, Chicago, Ill.* Taunton-New Bedford *Division, Taunton, Mass.* Rome *Division, Rome, N. Y.*

EXECUTIVE OFFICES: NEW YORK CITY
GENERAL OFFICES: ROME, N. Y.



MAKING THE MOST OF STEEL

AN AUTOMOBILE manufacturer recently insisted on lower prices from a parts maker. The latter, after scrutinizing all cost factors concluded that the efficiency of its heat treating department could be increased with a modern heat treating furnace. Not being able to afford the purchase of a new furnace, however, it found a way to increase output from its old furnace. Previously, cast, heat-resisting alloy carburizing boxes had been used, these boxes ranging from ⅜ to ½-inch in section and weighing 175 pounds each on the average. The cast-boxes were replaced with boxes made from heat-resisting alloy sheets, the sheets being ⅛-inch thick and the completed boxes weigh 65 pounds each. As a result, the parts maker is able to case-harden a larger tonnage of parts per charge than previously. Another parts manufacturer, confronted with the same problem and not wishing to buy sheet boxes to replace its cast boxes, has provided the cast boxes with sheet covers and thus obtained a noticeable increase in the net production per heat.



CRANKSHAFTS and other shafts present a smooth appearance after finish grinding, but they are covered with minute wheel marks. These little scratches cannot be seen by the naked eye, but under a microscope they appear as furrows in a plowed field. Bearings will give longer service if these scratches are removed, therefore, a lapping operation is performed using an unusually fine grade of optical emory such as employed in lens grinding.

$ $ $

In a manufacturing plant where short bars of high-speed steel are worked into tools to be used in production equipment, breakage of such tools in service is overcome by removing the forging strains and stresses before the hardening and tempering operation. This is accomplished by annealing the stock in a pit-type electric furnace equipped with a vertical crucible made of cast nickel-chromium alloy. About ¼-peck of coke, free from sulphur, is placed in the crucible to provide a nonoxidizing gas, this amount lasting about one week. Less scale appears on the annealed bars than when they first are placed in the furnace.

$ $ $

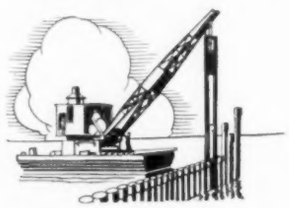
A plant laboratory found that a 5-horsepower adjustable-speed ventilating fan was the only direct-current equipment requiring operation of a larger motor-generator set over the week end. It was learned that with the installation of a grid-glow tube unit, the fan motor could be operated from the alternating current supply.

$ $ $

A Northern New Jersey manufacturer of brass and bronze cast bearings reports a slight improvement in demand for this product. This manufacturer, in commenting on the competitive condition in the bearings application field, says that a good many of his customers for some time have been aware of the good qualities of competitive bearings, such as antifriction bearings and those made from lignum vitae, synthetic resin, etc. In one case a bearings buyer obtained a life from a lignum vitae bearing fourteen times that of the bronze bearing. Nevertheless, the demand for the bronze and brass bearings continues due to the low cost and comparative dependability of such bearings when properly made. This manufacturer also reports that the necessity, in the present depression, of keeping down all costs as much as possible has resulted in brass bearings in some cases replacing antifriction bearings.

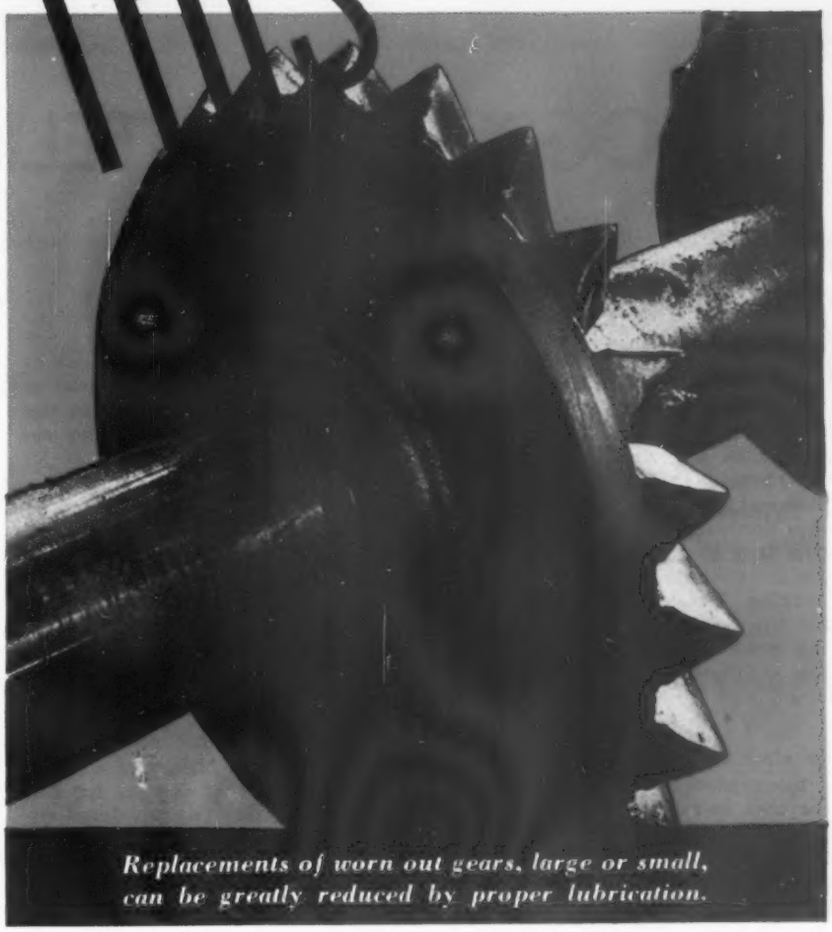
$ $ $

In general, cast steel resists the creep or flow at high temperatures such as 1000 to 1500 degrees Fahr. better than worked steel, either forged or rolled—that is, it is stiffer at these temperatures than forged or rolled steel of the same composition. It resists scoring or galling better than worked steel when rubbed under high pressures; resistance of cast steels to corrosive media, such as hot oil vapors, certain acids, etc., seems to be better than the resistance of worked steels.



WELDED steel pipe is finding use as piling in construction work. Medium diameter pipe is driven down by a pile driver in single lengths or in sections welded together when longer piling is required. After the pipe is driven, the earth inside is softened with water and blown out with compressed air; the pipe then is filled with concrete. Inherent strength of welds is demonstrated by fact that they withstand the pile driver blows without failure.

HOW OFTEN DOES THIS HAPPEN?



Replacements of worn out gears, large or small, can be greatly reduced by proper lubrication.

● **Pitted, scored and worn out—in need of replacement after only a few months of use. A costly operation involving heavy charges for time lost by shut-down, labor and the expense of the new gear. Yet many mills have been subjected to the same charges at frequent intervals throughout the course of a year. It has been considered a part of the cost of running a mill—a necessary evil.**

But this view-point has changed. Today, utmost economy in operating costs is imperative. And mill operators everywhere are turning to lubrication as the answer to their problems. Lubrication will reduce wear and add to the life of gears, bearings—all of the moving friction-causing mill units. But the economies gained vary greatly. The secret lies in the intelligent application of the proper lubricant.

Pennsylvania Lubricating Company engineers understand these problems thoroughly, and constant research in the laboratories of the company has placed at their disposal a series of products which meet present-day mill conditions in every way. They are fully qualified and glad to make recommendations as to the kind and consistency of lubricant which will assure the longest life to any particular type of machinery and to suggest methods of application that will increase the efficiency and economy of lubrication.

PENNSYLVANIA LUBRICATING COMPANY

PITTSBURGH, PENNSYLVANIA

1885—*Lubrication in the Steel Industry*—1932

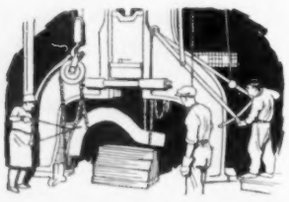
A Subsidiary of the Standard Oil Company (N. J.)

PROGRESS IN STEELMAKING

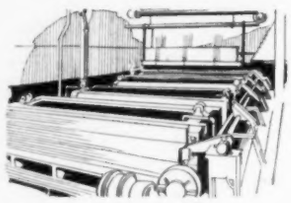
PHENOLIC roll-neck bearings, lubricated by water or oil or grease if desired, now are being used on many type rolling mills including bar, billet, sheet, skelp, strip and rod mills. One type is made by impregnating sheets of woven fabric, such as linen or cotton duck, with rosin and up to 5 per cent graphite, superimposing several sheets to provide the proper thickness; and then subjecting the laminated material to accurately controlled heat and pressure in a hydraulic press. In numerous installations this type bearing is carrying loads of 1000 to 2500 pounds per square inch of projected bearing area. Power savings of 10 per cent are disclosed by operating records.

♦ ♦ ♦

Low alloy steels containing chromium, manganese and silicon, which can be used as-rolled or in the heat-treated condition, are a recent development of a New York concern. By selecting the appropriate alloy percentages the desired physical properties can be obtained without any heat treatment or with a single normalizing, with or without subsequent tempering.



TESTS conducted at a Pacific coast plant establish the fact that one of the most vital points in the forging of corrosion-resisting steels is a thorough preheating in a controlled furnace separate but adjacent to the forging furnace. Preheating required about twice as long as for carbon steels. The demarcation line between the preheat and forging heat is definite and is controlled by maintaining the preheat temperature below the carbon precipitation point for nickel steels and just below the grain growth range for chromium steels. Another vital factor in forging is the rapidity in heating in the second furnace and during the reheats between working.



FAST setting is a feature of a newly developed acid-proof cement for lining pickling vats. The powdered cement, mixed with water to the proper consistency, will set initially in 1 hour and finally in 24 hours. The hardened joints require no paint to make them acid-proof. The material is resistant against attack of all acids except hydrofluoric.

♦ ♦ ♦

Extensive research shows that unburned magnesite brick give satisfactory service for linings of hot metal mixers, and for the lower sidewalls and bottoms of reheating furnaces and soaking pits.

♦ ♦ ♦

By removing a hexagon cap and turning an adjusting screw on a newly developed relief valve for hydraulic machinery in steelworks, the valve may be set to operate at pressures ranging from zero to 200 pounds per square inch.

♦ ♦ ♦

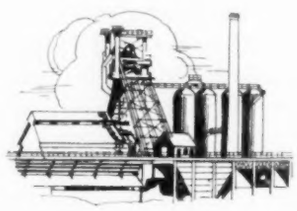
Increasing the possible production of a 3-high universal plate mill was obtained at a plant in the South through the use of an adjustable-speed 4000-horsepower motor and control, both of the standard reversing type. The control permits a slab to be entered in the mill at comparatively slow speed and the rolls then to be accelerated to finish the pass at higher speed.

♦ ♦ ♦

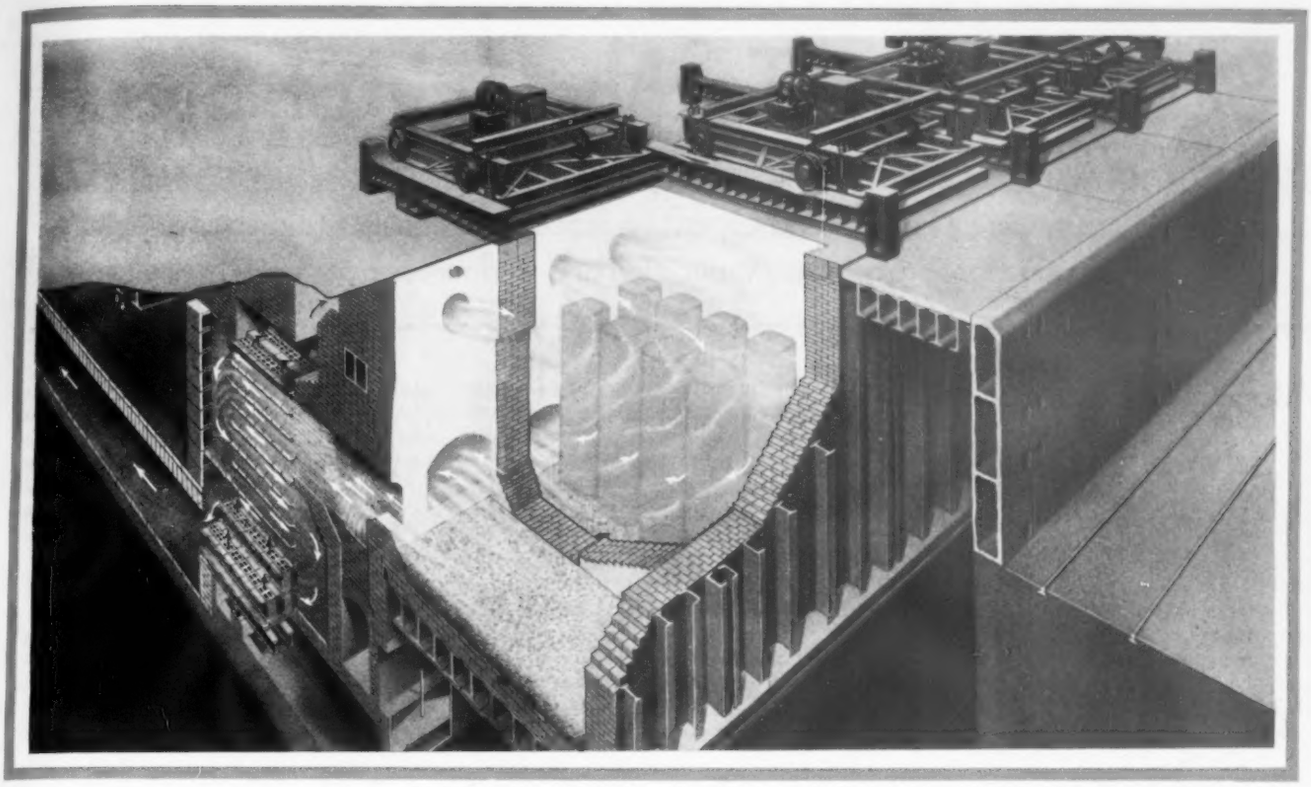
Rolls of a runout table serving a large hot strip mill in the Chicago district are driven by small induction motors but instead of actuating each roll with a separate motor, each motor drives a pair of rolls through suitable gearing. By a voltage and frequency adjustment each motor has a speed range of 4:1 and is required to start and stop twice a minute.

♦ ♦ ♦

Experience of an open-hearth superintendent proves that a calculated thermal conductivity of 0.290 to 0.323 is satisfactory from the standpoint of bottom life, boils and delays, and rapid melting of the charge. If the conductivity is too high, C3 insulation may be used to displace the clay brick. In such an event a 2½-inch layer of C3 concrete is equivalent to about the same thermal conductivity as 10 inches or four courses of clay brick.



BLAST furnaces built with the venturi-type throat or one having an outward batter of the lining from a point well down the stack to the stockline is gaining the approval of the ironmaking industry by reason of the fact that it affords decreased gas velocity, lower flue dust production and greater inwall protection.



ONE-WAY PITS
easily converted to oil fuel

A STEEL plant in the Chicago district now substitutes oil for gas in firing their one-way soaking pits. The market price of oil in this district is at present much lower than gas, on the B.T.U. basis. By being able to take advantage of this market condition, this plant is saving thousands of dollars.

It is possible that in the future the market price of some other fuel will be lower and with equally small change, that fuel can be substituted.

No change is made in pit construction except in burner ports, which allows the use of oil alone or with by-product coke oven gas. Operating men like the flexibility. They state that oil heats the ingots as uniformly as any other fuels.

One-way pits can be fired with coke gas, natural gas, blast furnace gas, fuel oil, producer gas or with a combination of these fuels.

But this flexibility of firing is not the only advantage of one-way pits. Look at the list for more. And whenever you want greater efficiency from your own soaking pits—whether you're thinking of getting new ones or not—write for "The Modern Soaking Pit."

ADVANTAGES OF ONE-WAY PITS:

1. **Fuel saving from 20% to 35% compared to reversing pits operating in the same plant under same operating conditions.**
2. **Large reduction in maintenance, since there are no checkers or reversing valves.**
3. **Better heated steel because of the vertical horseshoe travel of flame, and because burner ports are designed to properly mix and direct the fuel.**
4. **Reduction of scale by controlling the atmosphere in the pits.**

OPERATED BY HENRY L. DOHERTY & CO.

SC Surface Combustion

TOLEDO, OHIO

Sales and Engineering Service in Principal Cities

Also makers of... PAIR AND PACK FURNACES... BRIGHT ANNEALING FURNACES... SLAB AND BILLET HEATING FURNACES... MANTLE RECUPERATORS... AND INDUSTRIAL UNIT HEATERS

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Atmosphere Control

Preparation of dissociated ammonia for use in controlled atmosphere furnaces, by J. F. T. Berliner, in Metal Progress, April, 1932, p. 39, 5 pp., 3 illusts.

Recent developments in auxiliary processes and more rigid demands of consumers have required a corresponding advance in the heat treating field, and many of these efforts have succeeded or failed due to the ability or inability of men in charge to create a proper gaseous atmosphere in commercial furnaces. Most of such operations demand either an inert atmosphere or a reducing atmosphere. The first is produced readily by pure nitrogen. Hydrogen is a good example of the second. Mixtures of the two give various steps between the two extremes. Commercial dissociation of ammonia is now competing with hydrogen and nitrogen gases obtained from other sources.

An ammonia dissociator or cracking unit is described which yields from a 100-pound cylinder of ammonia 4500 cubic feet of gas containing 3400 cubic feet of pure hydrogen, an equivalent volume to that contained in 17 standard cylinders of compressed hydrogen. If pure nitrogen is desired the dissociated ammonia is burned in a closed combustion furnace with the required amount of air. Dissociated and burned ammonia yields 7800 cubic feet of nitrogen from one 100-pound container, the equivalent of the content of 39 cylinders of compressed nitrogen.

—STEEL, 4-11-32

Oxyacetylene Cutting

Application of oxacetylene cutting to cast iron, by George L. Walker, in Machinery, April, 1932, p. 572, 4 pp., 8 illusts.

As cast iron was first cut successfully with the oxygen lance, an adaptation of this principle was utilized for experiments in cutting cast iron with the oxyacetylene torch. This method consists of introducing a steel rod, as fuel, into the stream of oxygen at the surface of the cut. Another method consists of laying a strip of steel or "waster plate" over the surface of the cast iron. The third method employs a stream of iron powder, injected into the cut along with the cutting oxygen jet. Finally, cutting tips for cast iron and methods of manipulating the torch have been developed which practically supersede the first three methods, except in special cases. Cutting tips for cast iron are identical in construction with the regular line of tips for cutting steel but they have larger and usually more preheating flames.

The cost of making a cut in cast iron is considerably higher than the cost of making a similar cut in steel. The quality of the cast iron and the proficiency of the operator are both factors that appreciably affect the cutting cost.

—STEEL, 4-11-32

Stampings

Vital variables in steel stampings, in Product Engineering, April, 1932, p. 141, 3½ pp., 5 illusts.

In developing pressed metal construction, designs of the unit parts are tied up so closely with the requirements for economical manufacture that it is impossible to state definitely the limiting conditions. If necessary, by resorting to annealing operations and striking dies, extremely deep drawings to close tolerances can be obtained. But in every commercial design the object is to get the desired products at the least cost, and by avoiding extra annealing operations and those factors that involve extra operations and higher tool costs much can be saved.

A study of the part itself is insufficient. By changing the relationship of the various units it is often possible to increase manufacturing tolerances, decrease the depth of draw, increase corner radii, or possibly eliminate entirely some operation. In general it can be stated that for steel stampings the diameter and depth of cylindrical shapes and the diameter of flanges should be given a tolerance of plus or minus 0.005-inch in order to avoid additional operations.

—STEEL, 4-11-32

Shotwelding

Successful spot welding of corrosion-resisting steel, in American Machinist, March 3, 1932, p. 302, 2 pp., 7 illusts.

Efforts to spot weld corrosion-resisting steel of the chrome-nickel type have hitherto resulted in greatly decreased corrosion resistance due to separation of chromium in the steel. A recent development of the Edward G. Budd Mfg. Co., known as "shotwelding," is claimed to overcome this difficulty and has been used successfully in construction of an airplane and the Budd-Michelin pneumatic-tired railway car.

Shotwelding is a form of spot welding under highly accurate current, time and pressure control. Instead of taking the work to a spot welding machine the operator carries a pair of tongs, each lip of which forms one electrode. A helper just ahead of him clamps together the sections to be welded and the welder applies the portable welding tongs. A surge of current is applied momentarily and the weld is complete. Current of the order of 1200 amperes is applied and acts so quickly that the chromium in the metal has no time to segregate. A time switch, acting on the same principle as the automatic center punch, may be set to vary the time of current application from 0.01 to 0.001 second.

—STEEL, 4-11-32

Electron Tubes

Application of electron tubes in the steel industry, by D. W. Dean, in Iron and Steel Engineer, March, 1932, p. 124, 4½ pp., 7 illusts.

Based on the number of applications of electronic devices that already have been made in the steel industry it is apparent that there is a real economic field for such equipment. In general there are two classes of applications to be considered: (1) Applications for which present equipment does not exist; and (2) applications where existing equipment of conventional design may be satisfactory, but where there is a possibility of improved service from electronic devices.

In either case the question is purely one of economics. For the first class of applications mentioned, it is a question of whether or not the need will justify the anual charge. In the second case it is a question as to whether or not the annual charge for the electronic equipment will be less than for existing conventional means for doing the job.

—STEEL, 4-11-32

New Equipment

PRODUCTION FABRICATION TREATMENT FINISHING

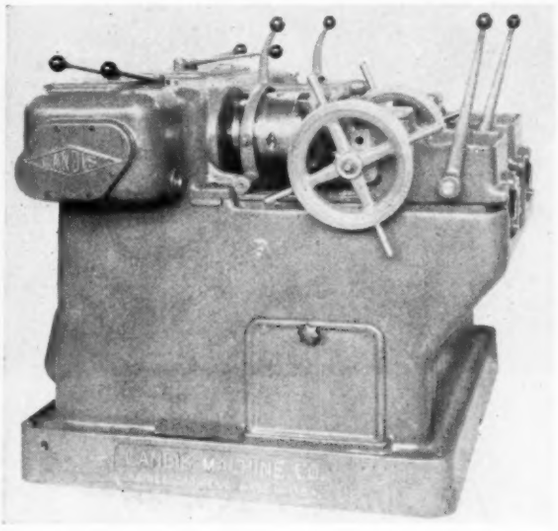
Designs Pipe and Nipple Threading Unit

Landis Machine Co. Inc., Waynesboro, Pa., has developed a 1¼-inch pipe and nipple threading. machine The unit, shown in the accompanying illustration, is made in the single and double head models and is equipped with either externally or internally tripped pipe and nipple threading heads. Its range is ⅛ to 1¼-inch with the externally tripped head and ¼ to 1¼-inch with the internally tripped type.

A single pulley drive with a friction clutch control delivers power to the machine. It can be motorized at any time by mounting a suitable motor in the compartment in the bed and connecting it to the drive shaft with a silent chain. The gear box is of the selective type with eight speeds. Spiral bevel gears drive the spindle, and the die head is located close to the front spindle bearing to reduce overhang to a minimum. The die head may be opened or closed automatically or by hand.

Gibbed to the bed, the carriage is operated by a lever which can be located on either the right or left-hand side. Guards and wipers protect the guides. The vise has both horizontal sidewise and vertical adjustments which make possible an extremely accurate alignment between the die head and the work.

The pump is a low pressure gear type unit and is built into the bed with facilities for removal without disconnecting any piping. It is driven from a constant speed shaft in the gear box and will reverse automatically when the machine is reversed. The bed is made of semisteel and cast in one piece, being reinforced by an inner wall to form a rigid support for the carriage and headstock.



Left—Pipe and nipple threading machine built by Landis Machine Co. Inc. is equipped with either externally or internally tripped threading heads, the automatic mechanism operating through a trip rod and yoke with the externally tripped head and through the reaming attachment with the other

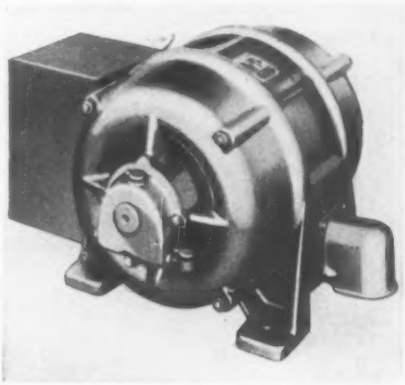
Below—Midwest welding ells made from Reading puddled iron

Welding Ells Made of Wrought Iron

Midwest Piping & Supply Co., 1450 South Second street, St. Louis, now is marketing welding ells made from Reading puddled iron. These were developed for the many jobs where genuine wrought iron pipe is advantageous, their resistance to corrosion, welding characteristics, uniformity and dimensional accuracy being important features. At present the sizes manufactured are from 2 to 10-inch inclusive, with both standard weight and extra heavy available.

The included angle of every ell is 90 or 45 degrees, as shown in the accompanying illustration, and center-to-face dimensions are maintained accurately. Long tangents are another distinctive advantage. One quarter inch of tangent is provided for each inch of fitting diameter; thus an 8-inch ell has tangents 2 inches long.

Each ell is made from one piece of puddled iron skelp by a special process developed and patented by the manufacturer. There is one welded longitudinal seam along the inner circumference. The Midwest line of welding fittings including heads, sleeves, and saddles in additions to ells made from mild steel pipe material, was described on page 44 of the Nov. 23, 1931, issue of STEEL.



Capacitor-type motor developed by Ideal Electric & Mfg. Co.

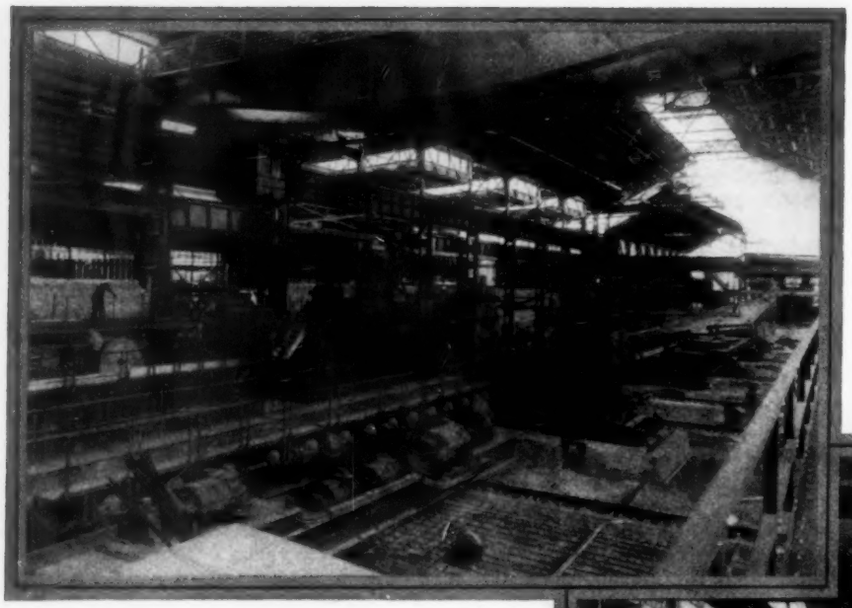
Develops Motor with High Power Factor

Ideal Electric & Mfg. Co., Mansfield, O., has developed a new capacitor-type polyphase induction motor in which the condenser reactive current flows through the windings of the unit, thereby producing a high power factor within the mechanism. This system gives this motor, shown herewith, improved running characteristics. It operates at practically unity (100 per cent) power factor at all loads.

The motor, designed by C. W. Noel of the Ideal company, is manufac-

MORGAN ENGINEERING ME MEANS MILL EFFICIENCY

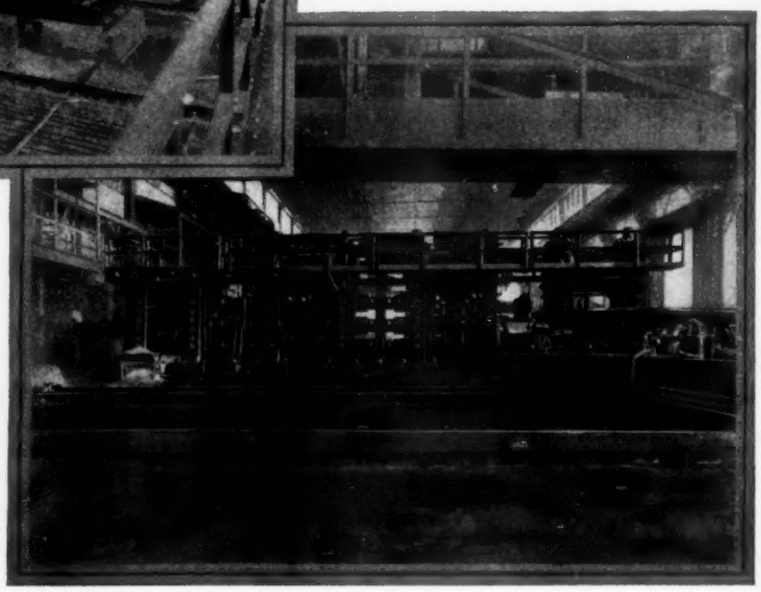
MORGAN • STRUCTURAL • MILLS



TWO MORGAN 28″
STRUCTURAL MILLS

•

Designed and built for prominent steel companies



MILLS were designed and built by us complete for rolling structural shapes up to 24″ I beams and 8″ x 8″ angles. These are but several of many structural mill installations, designed and built by us, including an 18″ mill.

Write for Bulletin No. 16

3

THE MORGAN ENGINEERING COMPANY

NEW YORK
25 BROADWAY

ALLIANCE, OHIO, U.S.A.

PITTSBURGH
1420 OLIVER BLDG.

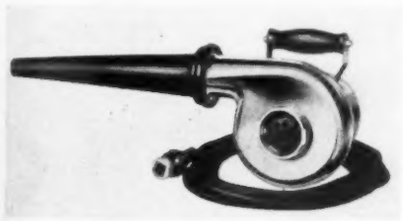
MORGAN DESIGNS AND BUILDS
Blooming Mills · Plate Mills
Structural Mills
Continuous Mills
Rod and Bar Mills

Electric Traveling Cranes
Steam Hydraulic Forging Presses
Steam Hammers

DESIGNERS · MANUFACTURERS · CONTRACTORS

tured in models giving 80 per cent power factor leading at full load and leading power factors up to 15 per cent at no load. The capacitors used are the oil-filled, oil-impregnated, hermetically-sealed type with individually fused sections. They are assembled in steel cases with conduit connections for mounting on the wall or any convenient location.

Capacitor motors also are made as slip ring variable motors in all sizes and speeds. This invention is particularly advantageous in a variable speed motor as this motor will retain its high power factor at low speeds, even to 50 per cent of standard rated speed. The new motor is built in models to meet all starting and inrush classifications including across-the-line starting in all sizes and speeds up to 200 horsepower at 80 per cent leading or unity power factor.



Portable electric blower designed by Breuer Electric Mfg. Co.

◆

New Four-Way Valve Is Operated Electrically

Hannifin Mfg. Co., 621-631 South Kolmar avenue, Chicago, has developed an electrically-operated valve designated model E for 4-way control of double-acting air cylinders. The unit, depicted in the accompanying illustration to show cover removed in the top view and the grouping of valve ports in the rear in the bottom view, has a wide range of applications. It provides instantaneous push button control of air cylinders from one or more stations.

The valve is operated by means of a double push button switch. Pressing the "start" button operates the cylinder in one direction and pressing "stop" button reverses the cylinder, which always is under air pressure at one end or the other. Operation is instantaneous; therefore, only momentary contact of the push button is required. The circuit is closed only when one of the push buttons is depressed. This valve also may be arranged for automatic time cycle operation by means of an automatic time switch.

Model E is available in two sizes with ¼ or ½-inch I. P. connections, furnished for operation on 110 or 220-volt, alternating or direct-current circuits. The Hannifin company also has developed an electrically-operated valve, model C, for remote control of air cylinders and a valve unit, model D, designed for time cycle operation or remote control of an air cylinder. These three types meet practically every conceivable application.

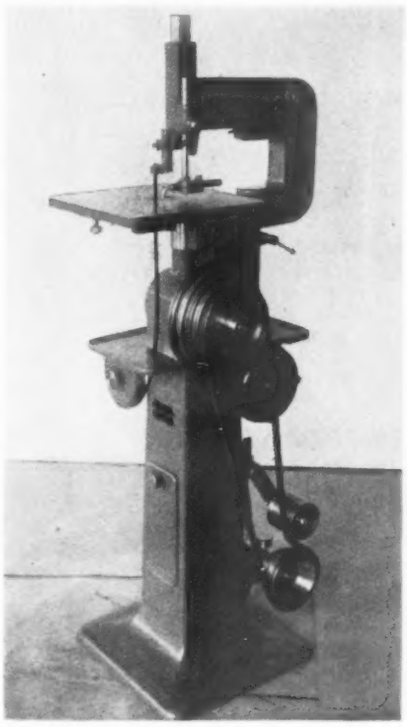
◆

Redesigned Die Making Unit Has New Features

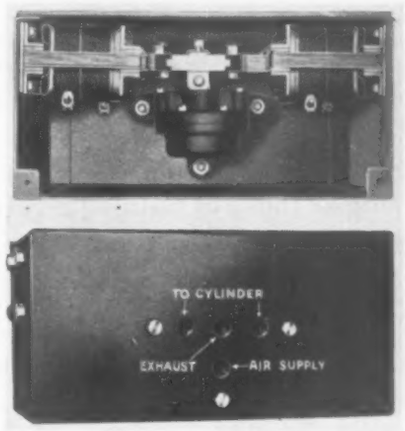
Oliver Instrument Co., Adrian, Mich., are announcing their redesigned P-4 model, pedestal type, die making machine. The new model, shown in the accompanying illustration, is a motor belt driven type, arranged for floor mounting and equipped with a V-pulley drive permitting five speeds. Special arrangements are provided for holding light or heavy files and saws. Clamps are attached directly to the reciprocating rams for holding the heavy parallel files. These clamps also hold adjustable clamps for the smaller files and saws.

The overarm is used for filing and sawing, the upper end of the file or saw being clamped to the ram which reciprocates in ample and rigid bearings or in the adjustable clamp referred to above. The upper arm is actuated through a bell crank lever and two heavy coil springs which provide proper tension on the saw. The overarm may be swung away from the file to remove the die for inspection and brought back instantly to the same position when filing is to be resumed. It is not necessary to remove the file or loosen it in the lower clamp to inspect the die. This new overarm eliminates the need for holddown brackets, fingers and file rollers which were required on previous models. Holddown fingers are attached directly to the overarm and the working surface of the table is entirely clear.

A saw magazine attached to the underside of the pan which does not reciprocate, carries saw coils of various lengths. The P-4 model has a capacity for sawing tool steel up to 2 inches thick. If desired, this machine can be furnished with variable stroke and mechanical feed. The unit weighs approximately 400 pounds and is driven by a ½-horsepower motor.



Die making machine redesigned by Oliver Instrument Co.



Hannifin model E electrically-operated 4-way valve

◆

Portable Electric Blower Has Many Uses

Breuer Electric Mfg. Co., 852 Blackhawk street, Chicago, recently announced a new portable electric blower designated model 4 for blowing dust out of motors and machinery parts, vacuum cleaning bins, and stock rooms and for spraying insecticides, etc. This new blower is almost identical in design and construction to the large heavy-duty line of blowers manufactured by the company, but is smaller in size.

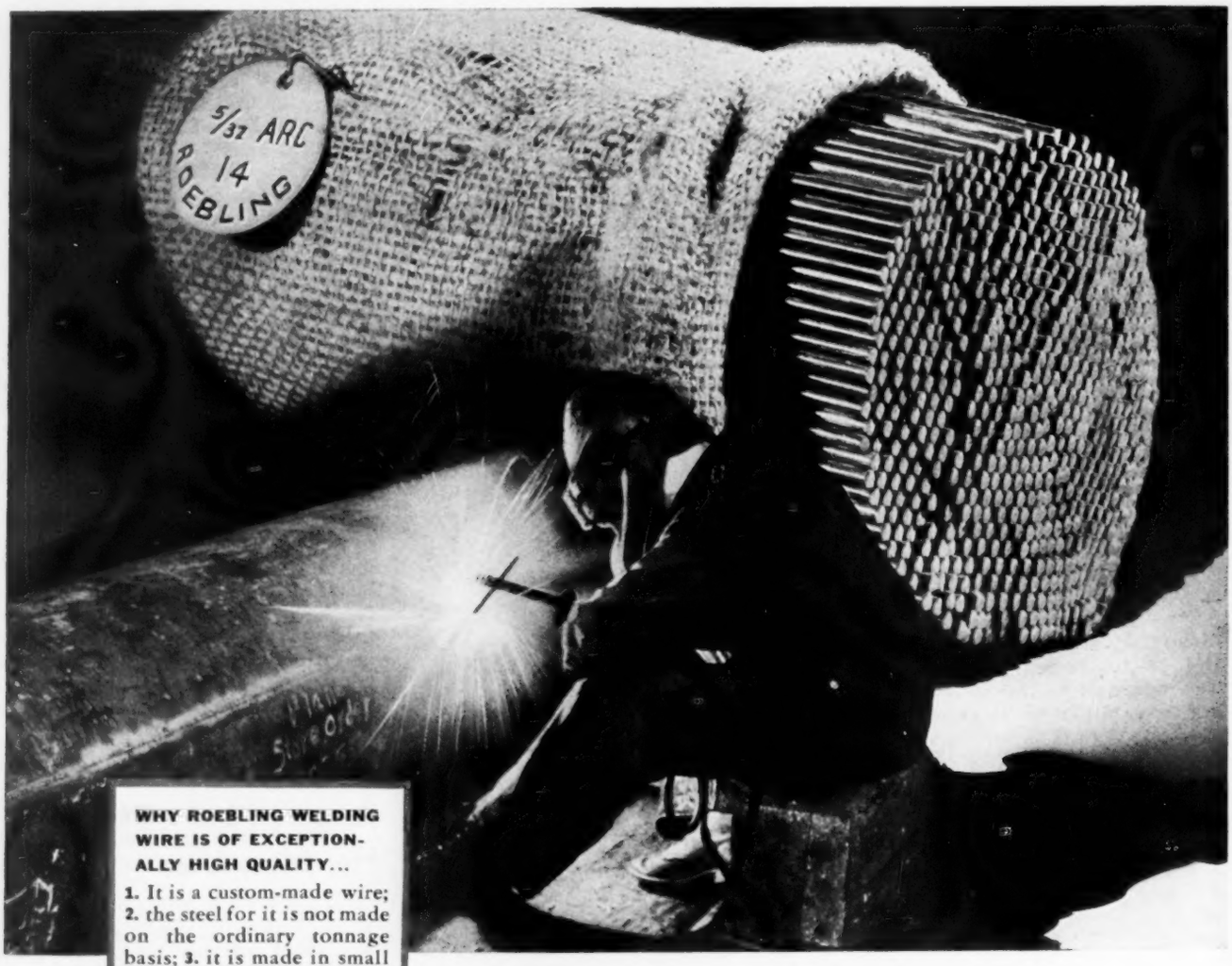
WHEN WELD SAFETY *is of vital* IMPORTANCE..

Few welding requirements, if any, are as exacting as those of railroad repair shops. Safety of passengers and train-crews demands absolutely dependable welds. That the railroads of this country yearly use hundreds of tons of Roebling Electric Welding Wire is therefore convincing evidence of its outstanding qualities.

In shipbuilding, too, welding of utmost reliability is essential and many tons of Roebling Welding Wire are used for this purpose. For example, 30 tons were used in welding the recently launched S. S. Mariposa of the Matson Line.

Note below the reasons why Roebling Welding Wire greatly facilitates the production of tough, strong welds. Then write to our nearest office for samples of this wire and convince yourself of its merit. Made in both gas and electric types.

JOHN A. ROEBLING'S SONS CO. - TRENTON, N. J.
Atlanta Boston Chicago Cleveland Los Angeles New York Philadelphia Portland, Ore. San Francisco Seattle Export Dept, New York, N. Y.



WHY ROEBLING WELDING WIRE IS OF EXCEPTIONALLY HIGH QUALITY...

1. It is a custom-made wire; **2.** the steel for it is not made on the ordinary tonnage basis; **3.** it is made in small open-hearth furnaces; of special melting stock; **5.** and is produced by Roebling's special methods; **6.** painstaking care is exercised throughout manufacture.

ROEBLING

THE CUSTOM-MADE WELDING WIRE—FOR EXACTING WELDERS

Motorcar Steel Demands Expanding

Structural Awards Show Substantial Gain; 105,000 Tons in New Inquiries —March Ingot Output Down—Week's Steelworks Rate 22 Per Cent

STEEL producers this week expect the first wave of steel buying set in motion by introduction of the Ford eight to wash up the most substantial Ford requirements this year. With difficulties encountered in production of the engine largely overcome, daily assemblies expanded to 300 by late last week and orders in hand for over 300,000 cars, buying for quantity production is definitely imminent.

Ford has taken prices on fender stock; a northern Ohio mill has reopened on the strength of an order for strip and plates; many mills report more liberal releases against old direct orders and broader inquiry from partsmakers. It will take several weeks to put daily production above 1000, and steel needs will accelerate gradually, but steelmaking operations at Pittsburgh, Youngstown, Cleveland and Chicago should feel some impulse from Ford beginning this week.

This Ford influence may "turn the corner" in steel production and supply a rebound from last week's decline of one point to 22 per cent, a rate no better than New Year week and lowest since then. Sentiment also suffered a sinking spell and was at the lowest ebb of the depression. Disclosure that the daily ingot rate in March had eased to 52,253 tons, or 24.6 per cent of capacity, was cushioned only by the fact the 50,092-ton low of December had not been broken.

Helping the automobile industry to lighten the background of this dark picture of production is the noteworthy activity—considering the times—in building. Topped by the award of 8600 tons for a bridge at Troy, N. Y., structural awards last week totaled 17,303 tons, compared with a weekly average of 12,839 tons for 1932 to date. Including 70,500 tons for four government projects and 15,000 tons at Buffalo, 105,000 tons of structural work is actively pending.

Railroads are ordering only track fastenings in quantity, but an improvement in freight traffice of western lines and reopening of more repair shops build up hopes of slightly larger steel requirements. Steel and cast iron pipe commitments are chiefly small lots for municipal work. Tin plate specifications tend to expand, but less than seasonal. There is a noticeable increase in bidding for government steel requirements.

Foreign iron and steel are increasingly aggravating, penetrating as far as Cleveland where German piling is being used for a Gulf Refining Co. project. Leading jobbers in New York have appointed a commissioner to adjust problems intensified by foreign importations. Over 15,000 tons of English and Dutch pig iron has been received recently at Philadelphia, and New England foundries are drawing on foreign stocks at Providence and Bridgeport. Japan has purchased 10,000 tons of steel scrap in the Pacific Northwest and is bidding up the market at New York.

In contrast with moderate improvement in demand for pig iron from foundries specializing in automotive castings, shipments to other melters show a tendency to decline. Blast furnace scrap is offered at prices which make it a serious competitor of iron ore; a more cheerful sentiment prevails in the market for steelworks scrap at Chicago.

Due mainly to reductions in foundry pig iron at Chicago, and basic iron in eastern Pennsylvania, STEEL's iron and steel price composite this week is off 7 cents to $29.74, lowest since November, 1915. Finished steel prices appear to be holding fairly well, though under some pressure at Detroit. STEEL's finished steel composite remains $47.62; and the steelworks scrap composite continues $7.87.

Composite Market Averages

	April 9	April 2	One Month Ago March, 1932	Three Month Ago Jan., 1932	One Year Ago April, 1931	Ten Years Ago April, 1922
Iron and Steel Composite	$29.74	$29.81	$29.61	$29.98	$31.59	$34.42
Finished Steel Composite	47.62	47.62	47.09	47.28	49.22	51.04
Steelworks Scrap Composite	7.87	7.87	7.94	8.03	10.12	13.65

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	April 9, 1932	March, 1932	Jan., 1932	April, 1931
PIG IRON				
Bessemer, del., Pittsburgh	$16.76	16.76	17.26	18.26
Basic, valley	15.00	15.00	15.00	17.00
Basic, eastern del., eastern Pa.	15.00	15.75	16.00	17.25
No. 2 foundry, del. Pittsburgh	16.26	16.51	17.26	18.26
No. 2 foundry, Chicago	16.00	16.50	16.50	17.50
*Southern No. 2, Birmingham	11.00	11.00	12.00	13.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.76	15.76	15.76	18.26
Malleable, valley	15.50	15.50	16.00	17.00
Malleable, Chicago	16.00	16.50	16.50	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	22.29	27.04
Gray forge, del. Pittsburgh	16.13	16.13	16.63	17.63
Ferromanganese, del. Pittsburgh	80.24	80.24	79.85½	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville, furnace, ovens	2.25	2.25	2.25	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	30.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	27.50	30.00
Billets, open-hearth, Pittsburgh	27.00	27.00	27.50	30.00
Wire rods, Pittsburgh	37.00	37.00	37.00	36.00

	April 9, 1932	March, 1932	Jan., 1932	April, 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.55	1.55	1.65
Steel bars, Chicago	1.70	1.70	1.70	1.80
Steel bars, Philadelphia	1.91	1.83	1.81	1.96
Iron bars, Chicago	1.70	1.70	1.60	1.80
Shapes, Pittsburgh	1.60	1.55	1.55	1.65
Shapes, Philadelphia	1.75	1.65	1.65	1.78
Shapes, Chicago	1.70	1.70	1.70	1.80
Tank plates, Pittsburgh	1.60	1.55	1.55	1.65
Tank plates, Philadelphia	1.79½	1.69½	1.69½	1.88½
Tank plates, Chicago	1.70	1.70	1.70	1.80
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.75	1.85
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.20	2.20	2.25
Sheets, No. 24, galvan., Pitts.	2.85	2.80	2.80	2.85
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	2.00	2.05
†Sheets, No. 24, hot, ann., Chi.	2.35	2.35	2.45	2.45
Sheets, No. 24 galvan., Chi.	3.00	3.00	2.95	3.00
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.25	12.50
Heavy melting steel, eastern Pa.	7.25	7.35	7.50	10.00
Heavy melting steel, Chicago	6.75	6.75	7.25	9.60
No. 1 wrought, eastern Pa.	8.00	9.00	9.35	11.00
No. 1 wrought, Chicago	6.25	6.25	7.25	8.80
Rails for rolling, Chicago	9.50	9.50	10.30	11.85

Sheets

Ford Company Takes Bids, Expected to Place Orders Soon—Specifications Still Light

SHEET PRICES, PAGE 49

Youngstown, O.—Steel sheet producers believe six weeks to two months' of fair business activity lie just ahead. The success of the General Motors and Ford exhibits, with sales running into several hundred thousand cars, assure sheet and strip mills new business before the advent of hot weather. A number of important mills in the Central West hold an encouraging volume of specifications covering deliveries through April and well into May. Prices are firm, and further test may not come until after present specifications have been worked out.

New York—There was little last minute specifying at the close of the first quarter, and the sheet trade doubts if there will be much activity for at least another month. Some producers believe a test of prices may not come before the beginning of next month. However, sellers are sounding out customers on second quarter needs, and it is possible definite indications as to how the new prices will hold may be had before that time.

Washington—Naval aircraft factory, Philadelphia, closes April 19 on 3700 pounds chrome-nickel sheets, annealed, 18 x 96 inches. Navy also takes bids April 19 on 115 tons of corrugated sheets for shipment to the Philippines. American Rolling Mill Co. is low on 132,900 pounds pickled and oil sheets for Mare Island, Calif., at $4717.95, delivered.

Philadelphia — Contracting for sheets is getting under way slowly. Prices are steady, pending a test. North Carolina opened bids April 7 on 200 tons of license tag stock.

Buffalo—Sellers report that sheet prices, advanced April 1, are being maintained firmly even on larger inquiry.

Pittsburgh—Ford Motor Co. has issued some small releases against old sheet orders, and though new business so far is light bids have been taken recently on material and additional orders are expected shortly. Specifications generally are unchanged from other consumers. Expiration of first quarter contracts resulted in only a slight upturn in orders. Prices are fairly steady but in most instances are being tested by only small lots. Hot-rolled annealed sheets continue 2.20c, Pittsburgh, with galvanized 2.85c. Producers of cold-rolled sheets for automotive use are taking a firmer stand on prices, generally quoting higher levels for second quarter delivery than those prevailing during the past three months.

Cleveland—The Fisher Body Co. plant re-opened April 5, cutting short what was expected to be an extended shutdown. When operations were resumed a somewhat heavier schedule was reported on Chevrolet body work, about 1000 jobs daily. Westinghouse Electric & Mfg. Co. has received an order for 150 carloads of electric refrigerators from a Philadelphia concern, which will benefit Ohio sheet mills, as the order probably will be filled at Mansfield, O. Sales in general show a diminishing tendency. Prices, in the main, lack the test necessary to demonstrate firmness.

Cincinnati—Demand for sheets has improved considerably. Automotive buying is steady.

Chicago—Sheet activity continues to lead all divisions of finished steel production. Production is 30 to 35 per cent. Roofing products demand in the more southerly markets is picking up. Further contracts for No. 24 hot-rolled annealed have been closed at 2.30c, mills. Small container makers are active. Galvanized sheets are steady at 2.95c, base, Gary and Indiana Harbor.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
San Francisco c.i.f.	2.30c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
New York, del.	2.55c
Philadelphia, del.	2.51c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
San Francisco, c.i.f.	2.80c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
Philadelphia, del.	3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
San Francisco, c.i.f.	3.45c

AUTOMOBILE NO. 20

Pittsburgh, base	2.80c to 2.90c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
Gary, Ind. Harbor, base	2.25c to 2.35c
Chicago, del.	2.30c to 2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
Gary, Ind. Harbor, base	2.75c to 2.85c
Chicago, del.	2.80c to 2.90c
Philadelphia, del.	3.06c
New York, del.	3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE
Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
Long ternes, 24, unassort.	3.00c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)
F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95
(Per pound)	
Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00
(To Manufacturing Trade)	
Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.79½c
*New York, delivered	1.90c
*Boston, delivered	2.02c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
*Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	1.80c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.75c
*New York, del.	1.87c
*Boston, del.	2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
*Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.00c
Do., wide flange	2.10c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
*Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.90c
*Boston, del.	2.02c
Pittsburgh, cold finish	1.65c to 1.75c
Pittsburgh, forg. qual.	1.75c to 1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.20c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.60c to 1.70c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chi., billet	1.75c
Chi., rail steel	1.55c to 1.65c
Chi., rail steel, road, bridge and culvert	1.55c
Philadelphia, cut lengths	2.16c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland	1.90c to 2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills
Alloy Quality Bars, 2.65c, mill
(Differentials to various classes of consumers)

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10 Cr.	0.45
2100	0.55		
2300	1.50	51.00 Cr. spring	0.20
2500	2.25		
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Cr., Ni., Van.	1.50
3400	3.20	Carbon Van.	0.95
4100 .15 to .25		9250 (flats)	0.25
Mo.	0.50	9250 (rds.,sq.)	0.50

Strip, Hoops, Bands

Hot strip, to 6 in., Pitts.	1.50c to 1.60c
Do, 6 1/16 to 24-in., Pitts.	1.40c to 1.50c
Hot strip to 6 in. Chi.	1.60c to 1.70c
Do, 6 1/16 to 24-in.	1.50c to 1.60c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 80-25-10 off in pkgs.; 80 25-10-2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset, 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c
Do. less carloads, 5 kegs or over ..... 2.75c; less than 5 kegs, 2.90c.
Chain, BB, BBB, 9/16-1½ in. ..... 33 1/3 off
Sheet piling, Pitts. 1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleve.	70, 10 and 5 off

Bars

Expected Impetus Fails to Help Buying—Prices Not Yet Tested By Demand—Production Light

BAR PRICES, PAGE 49

Chicago—Bar producers still expect to increase output this month. Indications are that western partsmakers will begin to get more substantial releases from automobile makers before May 1. Bar products output now is barely 25 per cent. Farm equipment makers have dropped all production plans for spring and summer. Ample stocks have been made up. Several road machinery builders are more active. Mills feel that business is not likely to be brought out by further price reductions, and efforts are being centered on holding the price level at 1.70c, Chicago, for bars, plates and shapes.

Boston—With efforts to firm bars at 1.60c, Pittsburgh, or 1.70c, Buffalo, additional importations are an increasing factor. Demand is light and prices untested. Jessop Steel Co., Philadelphia, has been awarded three lots of corrosion-resisting steel bars for Portsmouth navy yard, bidding 28.5c a pound on one lot.

New York—Steel bar contracts for second quarter are being closed at 1.60c, Pittsburgh, on the general run of business. Specifications, however, are slow, a development generally expected at this time in view of the flurry of specifications at the close of first quarter. It is believed most consumers have sufficient tonnage at the present rate of general business to last two or three weeks.

Crucible Steel Co. has been awarded 38½ tons of bar rivet steel for Brooklyn, N. Y., navy yard at 1.85c, bids March 22.

Philadelphia—Steel bars are firm at 1.60c, Pittsburgh, with volume of buying slightly improved. Iron bars are a trifle stronger at 1.60c to 1.65c, Pittsburgh.

Pittsburgh—Bar demand is only slightly changed but lacks the stimulus noted recently in closing out old contracts. Automotive requirements of steel and alloy bars generally are unchanged. The market still is tested only slightly, generally continuing 1.60c, Pittsburgh.

Youngstown, O.—The slight expansion in new business in common steel bars at the first of the month has continued. Only a fair amount of concrete bar work is in immediate prospect, and implement buying this spring is not up to average. The alloy steel bar trade lags. The new price for common steel bars, 1.60c, Pittsburgh, continues to hold firmly.

Cleveland—Carbon steel bars at 1.65c, Cleveland base, both locally and outside delivered, await improvement in specifying as April opened with the spotty character of orders received during March continuing. Forging bars to automotive partsmakers are differentiated at 1.55c, Cleveland.

Cold Finished Has Some Impetus from Ford Needs

Cold Finished Prices, Page 49

Pittsburgh—Cold-finished bar demand is holding its own, although there is hope for improved business from automotive users this month. A slight gain in requirements of Ford parts makers is noted. The market continues 2.00c.

Cleveland—Automotive parts orders have not been received in sufficient quantity to give cold bar finishers an upturn in orders. The market continues at 2.00c on most trading.

Tin Plate Demand Improves Moderately

Tin Plate Prices, Page 49

Pittsburgh—Tin plate activity is fairly steady at a rather low rate for this period. Specifications over the past several weeks have tended upward but in less than seasonal proportions. Mill operations are unchanged, averaging around 45 per cent.

Garley Steel Co., 2755 West Thirty-first street, Chicago, has changed its capital structure from $100,000 and 1000 shares no par value to $25,000 and 500 shares no par value.

Plates

Tank Work More Active—Mill Operations at Cleveland Are Expanded—Prices Steady

PLATE PRICES, PAGE 49

Pittsburgh—Plate business continues dull, consisting principally of small lots. Inquiry for fabricated work is quiet, with little change in the outlook. The market usually is 1.60c, Pittsburgh.

Boston—Inquiry for plates is light, and the 1.70c, eastern Pennsylvania mill, price on new business has not been subjected to severe test. Plate fabricators have little business booked. Bath Iron Works, Bath, Me., has been formally awarded the tender HICKORY at $152,480, requiring 100 or more tons.

New York — Miscellaneous tank work, principally for oil companies, is outstanding in the local plate market. Few large orders are noted, but the total appears to be the best in some time. Ship and pipe work are negligible. New York Central is expected to place contracts shortly for second quarter tank plates. Bids submitted were: Alan Wood, 1.84c, Newberry Junction; Bethlehem, 1.70c, West Seneca; Carnegie, 1.60c, Youngstown or Pittsburgh and 1.70c, West Seneca; Illinois Steel, 1.70c, Chicago; Weirton, 1.754c, Youngstown; Jones & Laughlin, 1.60c, Youngstown, and 1.70c, West Seneca; Central, 1.86775c, Newberry Junction; Youngstown Sheet & Tube, 1.60c, Youngstown; Lukens, 1.898c, New York, and 1.9145c, Newberry Junction; Otis, 1.60c, Cleveland; Inland Steel, 1.70c, Indiana Harbor.

Philadelphia—Plate specifications are more numerous, with 1.70c, base, Coatesville, Pa., the usual price.

Cleveland—Prospects in the market appear brighter as the Otis Steel Co.'s 152-inch and 112-inch mills went on April 8 for a run of about four days. A shipment of 14 carloads of Ford commercial car frames was made by a local fabricator last week. The price of 1.60c, base, Pittsburgh, is holding, with no report of cutting. Award of the 120-ton East Cleveland, O., water tank will be withheld at least until April 18.

Birmingham, Ala. — Fabricators are buying plates only as required for new orders, mills operating slowly. Contracts for three large dredge boats have been received in this district in the past several months, one now being under construction.

Chicago—Oil tank prospects in the plate market are more favorable, due to the improved position of the

oil industry. Since the Midcontinent advance in crude oil, similar price advances are being made in other areas. Plate prices are nominal at 1.70c, Chicago. Specifications are more widespread from makers of small tanks.

Contracts Placed

115 tons, 24-inch welded pipe, United States engineer, Cincinnati, to Treadwell Construction Co., Midland, Pa.

Contracts Pending

400 tons, ten waste heat boilers for Vernon, Calif.; Consolidated Steel Corp., Los Angeles, low.

400 tons, penstocks, Grand Valley Power plant, department of interior, Denver; bids April 28.

250 tons, plates and light structural material, refinery building for Standard Oil Co., Wood River, Ill.

Unstated tonnage, 500,000-gallon tank, water department, Lynchburg, Va., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Unstated tonnage, steel boat, United States engineer, New Orleans, to McClintic-Marshall Corp., Bethlehem, Pa.; $12,440.

Bolts, Nuts Quiet with Steady Buying Rate

Bolts, Nuts, Rivets Prices, Page 49

Pittsburgh — Activity in bolts, nuts and rivets is quiet and unchanged. Specifications are in about the volume of preceding weeks. Prices show a steadier tone, with little opposition to the advanced price of 75 off. Large rivets remain 2.25c, Pittsburgh, with no intimations of impending advance.

Chicago—Specifications for bolts, nuts and rivets fail to increase. While second quarter contracting for bolts and nuts on the basis of 75 per cent off is completed, much of early requirements was anticipated at the former lower price.

Aircraft Tubing Is Placed

Philadelphia—Ohio Seamless Tube Co., Shelby, O., has been awarded 700 feet chrome molybdenum 1½-inch O.D. steel tubing for the naval aircraft factory at 22.34c a foot delivered and 700 feet 1¾-inch O.D. at 32.4c.

Allis Business Holds

Allis-Chalmers Mfg. Co., Milwaukee, reports unfilled orders on March 21 totaled $7,221,000, compared with $7,363,000 on Feb. 29, this year. Orders at the end of March showed a decline of $668,000 from a year ago.

Railroads

Track Fastenings Active While Rail Buying Is Slow—Repair Work Creates Most Demand

TRACK MATERIAL PRICES, PAGE 49

Chicago—Fairly brisk activity continues in track fastenings. About 2000 tons has been placed in the last few days. Views are that track maintenance and car equipment purchases and repairs have fallen two years behind normal procedure and that eventually railroad buying of importance will develop in this territory. Immediate prospects, outside of essential repair work, are meager. Rail mill operations continue at about 20 per cent and are scheduled ahead indefinitely on recent orders, as well as releases against last season's contracts. South Pacific is building 100 refrigerator cars for Pacific Fruit Express. In general, roads are increasing maintenance work. Wabash railroad plans steady shop and maintenance work for some time. It announces that 3200 men will be employed on track maintenance by June 1.

New York—Further postponement of the Wheeling & Lake Erie's car purchase has been the only development among car-building circles. The New York Central has opened bids on tracks accessories.

Cleveland — Wheeling & Lake Erie's slowness to close on its pending gondola order has given rise to some supposition that the entire program, involving the building of 100 70-ton units, may be discarded. Railroad purchasing of steel products still is without improvement. New York Central shops at Collinwood, O., and Bucyrus, O., have been reopened, after the shutdown in mid-March.

Pittsburgh—Railroad specifications are fairly steady, following a slight improvement in March. Inquiry of the New York Central railroad for track material represents practically the only new inquiry for rails or fastenings.

Car Orders Placed

Pacific Fruit Express, 100 refrigerator cars, to shops of Southern Pacific, according to arrangements previously announced.

Equipment Trade Expanding

A survey of foreign markets for automotive equipment by the automotive division, bureau of foreign and domestic commerce, Washington, discloses a vast potential market as the sequel to the rapid growth of motor transportation abroad. This market is somewhat independent of sales of new motor vehicles and is comparatively steady. From 1924 to 1930, United States exports of replacement parts and servicing equipment expanded from $31,627,000 to $61,027,000, with a peak of $88,664,000 in 1929.

Wire Prices Are Steady, With Light Buying

Wire Prices, Page 49

Chicago—Gains in wire products specifications in the last two weeks have been slight. Better prospects appear in merchant wire than in manufacturers' wire. Indications are the fencing season will be of little consequence. Although contract sales are few, prices continue to hold. A mill west of here is reported to be offering to meet mail order prices on merchant wire goods among some of its dealer customers.

Worcester, Mass. — Wire production for first quarter shows a drop from last year's figures. Automobile demand continues to lead the market. Prices are steady.

New York—Little change is noted in buying of wire products. Prices continue unchanged for nails at $1.95, Pittsburgh, and plain bright wire at 2.20c, Pittsburgh.

Philadelphia—Wire products are responding slightly to seasonal influences upward. Prices are steady.

Pittsburgh—Prices of wire products generally are well observed despite absence of a thorough test, as a result of continued quiet. Specifications approximate their recent volume with little change in requirements of industrial or agricultural consumers. Nails hold at $1.95 in carload lots, with plain wire 2.20c and wire rods $37.

Cleveland—Although orders are scarce there appears no variation from a minimum of 2.20c, mill, on plain wire. Nails at $1.95 a keg in carlots are fairly well maintained. Wire rods, on light trading, are $37 per ton.

Hub Metal Bed Co., 4343 South Ashland avenue, Chicago, has changed its capitalization from $100,000 to $50,000 and 360 shares no par value.

Structural Shapes

Pending List Near Closing Mounts Near 105,000 Tons —Privately Sponsored Building More Voluminous —8300-Ton Bridge Placed— Awards Double Last Week

STRUCTURAL SHAPE PRICES, PAGE 49

New York—Phoenix Bridge Co., Phoenixville, Pa., will fabricate 8600 tons for the Troy-Menands state bridge, the largest award in weeks. New bids will be taken on the Newark, N. J., federal building, close to 5000 tons. About 60,000 tons is active in this area, largely accounted for by three projects. The first unit of the Knickerbocker City development will take about 750 tons. Bids are in on several hundred tons for state bridges and close April 14 on a grain elevator at Albany. Plain material on new business is 1.70c, eastern mill, but is untested.

Lettings in New York territory in March were 795 tons, according to New York Structural Steel Board of Trade, lowest in history. Awards in March, 1931, were 159,044 tons, but this included 125,000 tons for the Rockefeller center buildings. In February, 1932, lettings were 4870 tons. Bridge and engineering work is not included in these figures.

Boston—Maine bridges will require about 200 tons, while bids are also in on additional veterans' hospital buildings at Rutland Heights and an inspection station at Beecher Falls, Vt. Merritt-Chapman & Scott Corp. has the contract for the pier at Bourne, Mass., taking about 800 tons, part of which is reported placed. Plain material is steady at 1.60c on new business.

Philadelphia—Recent bids on 7400 tons for the Washington postoffice is a leading development. General structural buying continues light, however. Inquiries, while small, are slightly more numerous. Plain material is fairly steady at 1.75c, Philadelphia. Should the Pennsylvania railroad's application to the Reconstruction Finance Corp. for loans receive early approval, its electrification work will be resumed about July 1. This program, restricted for some time, came to a complete standstill April 1.

Buffalo—Bids will be taken within the next six weeks on some of the largest construction projects that have originated in this district in many months. It is estimated that more than 15,000 tons of structural steel is involved.

Pittsburgh—Private work continues to make a better showing in structural awards and inquiry than was true several months ago. The volume of orders and new business, however, is but little changed. The market usually is 1.60c, Pittsburgh.

Standard Inspection Co., Pittsburgh, is low on field inspection of structural steel for the Pittsburgh postoffice with a bid of 12.00c a ton. There are about 16,000 tons, fabricated by Fort Pitt Bridge Works, the general contractor being Aronberg-Fried Co., Cleveland and New York.

St. Louis—The outlook for building here has been improved by an agreement to reduce wages of skilled workmen about 17 per cent. The agreement, subject to approval by the several crafts, extends for a year from April 17. It is expected that a number of important enterprises will be commenced immediately after the reduction takes effect. Among these are the municipal auditorium.

Cleveland — Projects of consequence appear more scattered as April opened than at the same time last year, although fabricators are pointing to the superstructure of the Cleveland postoffice now that bids were received on 900 tons in the foundation April 8. Gulf Refining's intended purchase of 570 tons of sheet piling for Cleveland installation has been filled in large part by use of German piling the Gulf company has had in stock on the Atlantic coast for some time. A Canton, O., contractor is low on the Canton postoffice. Pennsylvania state bridgework in Lawrence county goes in April 15 to take a round tonnage.

Awards Compared

	Tons
Awards, week ended Apr. 9..	17,303
Awards, week ended Apr. 2..	9,535
Awards, week ended Mar. 26	16,975
Awards, this week in 1931	45,220
Av. weekly awards, 1931....	34,236
Av. weekly awards, 1932....	13,138
Av. weekly awards, March....	17,003
Total awards to date, 1931..	690,287
Total awards to date, 1932	197,059

Plain material is some firmer at 1.60c, Pittsburgh, and fabricators are attempting to eliminate bids on fabricated material below $45 a ton.

Chicago—Despite the lack of private building work, structural fabricators have fairly good prospects in public works construction. A bulge in inquiries has developed. Plain material buyers see no basis for important commitments ahead in this market. The base price is nominally 1.70c, Chicago. Iowa and Nebraska are in the market for 1200 tons in bridge work, and Indiana has placed additional bridge steel. Several western railroads are in the market for small bridge-span orders.

Contracts Placed

8600 tons, superstructure, highway bridge, Troy-Menands, N. Y., to Phoenix Bridge Co., Phoenixville, Pa., at $957,181.

900 tons, postoffice, Texarkana, Ark.-Texas, to Petroleum Iron Works, Beaumont, Tex.; Gauger Construction Co., Memphis, Tenn., contractor.

900 tons, St. Paul postoffice substructure to McClintic-Marshall Corp., Bethlehem, Pa.

870 tons, grain elevator, Albany, N. Y.; 460 tons to Lackawanna Steel Construction Co., Buffalo, 382 tons to Ingalls Iron Works Co., Verona, Pa., and balance to unstated fabricator.

650 tons, high school, Battle Creek, Mich., to R. C. Mahon Co., Detroit.

572 tons, high school, Albion, N. Y., to Lackawanna Steel Construction Co., Buffalo.

570 tons, sheet steel piling, Gulf Refining Co., Pittsburgh, for installation in Cleveland. Bulk of tonnage to be supplied from German piling in Gulf Refining inventories; balance, a small portion, to Carnegie Steel Co., Pittsburgh.

450 tons, wharf and warehouse, Lake Charles Harbor & Terminal district, Lake Charles, La., to Orange Car & Steel Co., Orange, Tex.

400 tons, postoffice, Davenport, Iowa, to Davenport Machine & Foundry Co., Davenport.

350 tons, postoffice and courthouse, Fairbanks, Alaska, to McClintic-Marshall Corp., Bethlehem, Pa.; McDonald Construction Co., St. Louis, contractor.

300 tons, courthouse, Longview, Tex., to Petroleum Iron Works, Beaumont, Tex.

300 tons, bridge spans, Madison county, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

270 tons, plant, Hoyt Bros., Newark, N. J., to Passaic Steel & Iron Co., East Rutherford, N. J., through Fassler Co.

225 tons, truss spans, Valley Hill, Miss., to Kansas City Bridge Co., Kansas City, Mo.

200 tons, Mannington Mills building, Philadelphia, to Morris Wheeler & Co. Inc., Philadelphia.

160 tons, officers' apartment, Fort Jay, New York, to Lehigh Structural Steel Co., Allentown, Pa., through Longacre Engineering Co.

150 tons, piling, Marseilles lock and

dam, Illinois river, to Jones & Laughlin Steel Corp., Pittsburgh.
150 tons, cracking furnace, M. W. Kellogg Co., Casper, Wyo., to Stearns-Roger Mfg. Co., Denver.
148 tons, Rice bridge, York, Me., for Maine highway department, to New England Structural Co., Boston; Kennebec Construction Co., Augusta, Me., contractor.
140 tons, Stannes church, Newark, N. J., to Passaic Steel & Iron Co., East Rutherford, N. J., through E. M. Waldron Co.
140 tons, plant building for Lever Bros. Co., Hammond, Ind., to Hansell-Elcock Co., Chicago. Reported, STEEL, April 4, to unstated.
120 tons, bridges, Saratoga county, New York, to Lackawanna Steel Construction Co., Buffalo.
120 tons, bridge, Southbridge street, Worcester, Mass., to Eastern Bridge & Structural Co., Worcester.
113 tons, postoffice, Findlay, O., to Fort Pitt Bridge Works, Pittsburgh, Massillon, O., division; H. G. Christman Co., South Bend, Ind., contractor. Pollak Steel Co., Cincinnati, awarded 32 tons reinforcing steel.
105 tons, bell buoys, Staten Island, for department of commerce, to Pennsylvania Engineering Works, Newcastle, Pa.
100 tons, coliseum, Sioux Falls, N. Dak., to Hassell Iron Works Co., Colorado Springs, Colo.
100 tons, bridge spans, Indiana highway commission, to Vincennes Bridge Co., Vincennes, Ind.
100 tons, warehouse, Greenspan Bros., Perth Amboy, N. J., to Elizabeth Iron Works, Elizabeth, N. J.; Goldfarb & Sons, contractors. Truscon Steel Co., Youngstown, O., awarded 50 tons reinforcing rods.
100 tons, postoffices, Ludington, Mich., and Harvey, Ill., to Duffin Iron Co., Chicago.

Contracts Pending

23,000 tons, substructure and superstructure, postoffice annex, New York; bids April 18 from six selected bidders on foundation.
20,000 tons, department of labor and interstate commerce commission buildings with connecting wing, Washington; bids May 16.
20,000 tons, federal court building, Duane street, New York; bids April 21 on foundations.
7400 tons, postoffice, Washington; bids received.
2600 tons, bridge work in California, Union Pacific railroad.
1200 tons, state bridge work, Iowa and Nebraska.
1200 tons, postoffice, Chattanooga. Bend, Ind., low on marble alternate.
900 tons, auditorium, Grand Rapids, Mich.; Fort Pitt Bridge Works, Pittsburgh, low.
800 tons, car underframes, Pacific Coast Express, San Francisco; bids being taken.
750 tons, first unit, Knickerbocker City, lower east side, New York; Fred F. French Co., builder.
600 tons, postoffice, Knoxville, Tenn.; bids April 21.
550 tons, postoffice and courthouse, Baton Rouge, La.; Algernon Blair, Montgomery, low; limestone, $308,760; marble, $364,473.
500 tons, school building, Clinton, N. Y.
500 tons, state bridges, New York, bids in.
500 tons, power house, Furstmann Woolen Co., Garfield, N. J.
500 tons, bridge work in California, Southern Pacific railroad.
400 tons, building, Warren, Pa., for Commonwealth of Pennsylvania.
400 tons, federal jail, Milan, Mich.
400 tons, highway bridge, Columbus Junction, Iowa.
400 tons, bridge over Platte river, Central City, Nebr.
375 tons, garage, Marks Bros., New York.
300 tons, waterworks, Wilmette, Ill.
250 tons, school and auditorium, Teaneck, N. J.
250 tons, bridge spans for Wabash railroad.
235 tons, bridge over Virgin river, Clark county, Nev.; bids April 13.
200 tons, warehouse, National Casket Co., Philadelphia.
200 tons, Panther Hollow bridge repairs, Pittsburgh; Fort Pitt Bridge Works, Pittsburgh, low.
200 tons, state bridges, Maine; bids in.
150 tons, shapes and plates, overhaul, Pacific locks, Panama; bids April 27.
140 tons, postoffice, Nyack, N. Y.
107 tons, state highway bridge, Beverly, O.; bids April 15.
105 tons, state highway bridge, Rome, O.; bids April 15.

Concrete Bars

Eastern Gas Taxes Diverted To Other Than Highway Construction—Foreign Bars Apparently Less Active—Illinois Holds Up Contracts—Week's Awards Are Small

REINFORCING BAR PRICES, PAGE 49

New York—Demand for road mesh has shown little seasonal improvement due in part to the diversion of gasoline tax funds to needs other than highway construction. Although untested, 1.95c holds on small lots, mill lengths, delivered New York. Inquiry is slightly improved with sewer bids in for Brooklyn, N. Y., several state highways and bridges and a few building jobs. Bids on the general postoffice annex foundation next week will be taken from six selected bidders. Fredburn Construction Co. has been awarded the general contract for the deckwork, route 25 viaduct, New Jersey, subject to the passing of the State Enabling act, at $881,054.25.

Boston—State highway and bridge work has slightly stimulated inquiry for reinforcing steel, bids being on several hundred tons for Maine and Vermont. For city work at Holyoke, Mass., close to 100 tons was placed, while other lettings include moderate tonnages. Prices are firmer on domestic bars at 1.60c, Pittsburgh.

Philadelphia—Outstanding is the opening of bids this week for 500 tons in a filtration plant, Easton, Pa., for the Lehigh Water Co. The market is nominally 1.60c, Pittsburgh, on mill lengths. The Danville, Pa., plant of Bethlehem Steel Co. has started up operations with 150 employes producing reinforcing bars and fence posts.

Pittsburgh—Reinforcing bar business tends principally toward small lots, more than half of recent orders being made up of single carload size. Specifications are less active following the beginning of the new quarter and institution of higher prices. The market is untested at 1.60c, Pittsburgh.

Cleveland—Reinforcing bar and mesh interests have nothing but small-lot projects before them. A state letting goes in at Columbus April 15. Building operations in this district are so slack that at present there are no active pending lots of 100 tons or more. The Elmira, N. Y., grade crossing, 500 tons, which was being figured through a Cleveland contractor, still is open.

Chicago—Shipments of reinforcing bars for highway surfacing are being held up by delays of highway departments of several North Central states in awarding general contracts. About 1000 tons thus is being held up in Illinois. Bids were tabulated April 9 on about 100 miles additional for Illinois. Wisconsin has an active program, including a number of overhead bridges. Rail steel reinforcing bar prices for road work are 1.55c.

St. Louis—Missouri had a $3,750,000 road letting April 7 which involved, besides a number of small bridges, 108 miles of new concrete

Awards Compared

	Tons
Awards, week ended Apr. 9..	2,170
Awards, week ended Apr. 2	3,502
Awards, week ended Mar. 26	4,120
Awards, this week, 1931....	6,356
Av. weekly awards, 1931.....	6,808
Av. weekly awards, 1932.....	4,474
Av. weekly awards, March..	3,997
Total awards to date, 1931..	114,354
Total awards to date, 1932	67,119

paving. The letting includes new construction work in 30 counties.

Contracts Placed

400 tons, waterworks, Moline, Ill., to unstated.

325 tons, postoffice and courthouse, Fairbanks, Alaska, to Pacific Coast Steel Corp., San Francisco; McDonald Construction Co., St. Louis, contractor.

306 tons, Michigan avenue bridge, Buffalo, to Joseph T. Ryerson & Son Inc., Chicago.

250 tons, postoffice, Texarkana, Ark.-Texas, to Laclede Steel Co., St. Louis; Gauger Construction Co., Memphis, Tenn, contractor.

240 tons, highway, White Plains, N. Y., to Concrete Steel Co., New York, through A. W. Banko Inc., contractor.

225 tons, veterans' hospital, Aspinwall, Pa., to Joseph T. Ryerson & Son Inc., Chicago.

200 tons, state office building, department public works, Boston, to Concrete Steel Co., New York; F. V. Warren Co., Philadelphia, contractor.

130 tons, state highway construction, eastern Washington, to Pacific Coast Steel Corp., San Francisco.

100 tons, school, Taunton, Mass., to Concrete Steel Co., New York.

Contracts Pending

500 tons, waterfront project, Stockton, Calif.; bids opened.

500 tons, filtration plant, Lehigh Water Co., Easton, Pa.; bids week of April 11.

400 tons, state quarry overhead structure, Waukesha county, Wis.

306 tons, 17 state highway projects, Ohio; bids, Columbus, O., April 15.

250 tons, five industrial buildings, dirigible base, Sunnyvale, Calif.; bids April 27.

205 tons, highway work, Sonoma county, Calif.; bids April 20.

174 tons, West boulevard bridge over Venice boulevard, Los Angeles; bids April 20.

138 tons, bridge over Rocky creek, Monterey county, Calif.; bids April 20.

130 tons, state bridge, Maine; bids in.

100 tons, baseball stadium, University of California, Berkeley, Calif.; bids opened.

100 tons, postoffice foundations, Phoenix, Ariz.; bids opened.

100 tons, San Gabriel dam No. 2, Los Angeles county, California; bids opened.

100 tons, bridge over Fox river, De Pere, Wis.

100 tons, Panama; bids April 15.

Open Barge Canal April 14

Buffalo—April 14 is the date now set for opening navigation on the New York state barge canal. Receipt of scrap from the East is expected as soon as navigation opens.

Rosenfelder Machinery Co., Houston, Tex., machine tool jobber, has increased capital from $40,000 to $65,000.

Pipe

Gas Distribution Lines Provide Some Orders—Municipal Buying Slow—Cast Pipe Easy

Chicago—Further activity in steel pipe results from demand for short natural gas distribution lines. Oswego, Kans., is to buy about 64,000 feet of 18-inch, with gate valves and fittings. Spot carload orders for cast pipe are fairly numerous. Three important waterworks and sewage treatment plants are pending in this area. The intake tunnel of the proposed Wilmette, Ill., waterworks includes 400 to 500 tons of miscellaneous cast sizes.

Boston—Municipal buying of cast pipe continues curtailed. Natick, Mass., has closed on about 200 tons. Belmont, Framingham, Needham and Winthrop, Mass., have appropriations for fair tonnages. Boston has closed on gates and hydrants with the Cambridge Machine & Tool Co., while Chapman Valve Mfg. Co. will furnish sluice gates for the Chestnut Hill pumping station.

New York—Cast pipe prices continue weak with some direct awards going close to $23, foundry, while contractors have been buying at lower figures. Binghampton, N. Y., is taking new bids on 325 tons of 12-inch. Somers, N. Y., has bids on close to 600 tons. Sherman and Farnham, N. Y., are expected in the market soon for several hundred tons. Utilities are buying little pipe. Suburban Engineering Co. has a water line contract at Lewisburg, Pa., taking a fair tonnage.

Washington—Fluor Corp., Ltd., Kansas City, Mo., is low on high and medium pressure air and helium piping for the navy's dirigible base at Sunnyvale, Calif., at $117,480.

Pittsburgh—Few pipe line projects are taking form. Award of 8000 tons for a line for the Southern Counties Gas Co. in California, on which bids closed April 7, is expected shortly but no other lines have reached an active status. Demand for standard pipe continues poor, and oil and gas well drilling is quiet. Pipe mill operations are below 20 per cent.

Cleveland—No improvement is noted in demand for tubular products, although some releases for mechanical tubing are being received from Detroit interests.

Cast Pipe Placed

598 tons, 6 and 8-inch class 250, Glendale, Calif., to R. D. Wood & Co., Emaus, Pa.

400 tons, 4 and 12-inch, Bethlehem, Pa., to Warren Foundry & Pipe Co., Phillipsburg, Pa.

400 tons, 12 and 16-inch, Port Chester and Peekskill, N. Y., to Donaldson Iron Co., Emaus, Pa.

350 tons, mainly 6-inch, Dallas, Tex., to National Cast Iron Pipe Co., Birmingham, Ala.

325 tons, 6 and 8-inch, Waterford, Conn.; 200 tons to United States Pipe & Foundry Co., Birmingham, Ala., and remainder divided between R. D. Wood & Co., Philadelphia, and Central Foundry Co., New York.

300 tons, 6-inch and up with fittings, White Plains, N. Y., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

200 tons, 6 and 12-inch, Natick, Mass., to Warren Foundry & Pipe Co.

165 tons, various sizes, boys' school, Wallkill, N. Y., to Warren Pipe & Foundry Co., Phillipsburg, Pa.

110 tons, small sizes, Bangor, Me., to R. D. Wood & Co., Philadelphia, and Warren Foundry & Pipe Co.

Steel Pipe Placed

150 tons, heating and other work, United States Veterans' hospital, St. Petersburg, Fla.; three cars, steel, National Tube Co.; two cars, wrought iron, Reading Iron Co., and one car soil pipe, Central Foundry Co., New York; J. J. Nolan & Co., Inc., Memphis, Tenn., contractor.

125 tons, steel and wrought, Veterans' hospital, Rutland Heights, Mass., to Spang, Chalfant & Co., Pittsburgh, and Reading Iron Co., Reading, Pa.

Unstated tonnage, 302 seamless corrosion resisting steel tubes, navy, Norfolk, Va., at $16.91; and 130 steel boiler tubes, Lakehurst, N. J., at $8.30, to National Tube Co., Pittsburgh.

Unstated tonnage, 72,000 feet up to 4-inch, mainly 2-inch and under, galvanized, Panama, to Central Tube Co., Pittsburgh, $8589.80, delivered.

Cast Pipe Pending

2500 tons, 36-inch, Passaic Valley Water commission, Paterson, N. J.; bids April 19 with alternates on steel and concrete.

800 tons, Harlem Valley hospital, Wingdale, N. Y.; bids April 27.

600 tons, miscellaneous sizes, waterworks, Wilmette, Ill., including 500 tons intake tunnel pipe; previously reported as 300 tons.

550 tons, 6 to 12-inch, Somers, N. Y.; bids in.

325 tons, 12-inch, Binghamton, N. Y., bids rejected; readvertised April 11.

Steel Pipe Pending

64,000 feet, 18-inch for natural gas distribution line at Oswego, Kans.; Emporia Engineering Co., Emporia, Kans., engineer.

3450 tons, 36 and 45-inch, Passaic Valley Water commission, Paterson, N. J.; bids April 19, with alternate on concrete.

Unstated tonnage, 1170 feet, 24-inch steel discharge dredging pipe in 65 sections, United States engineer, St. Louis; Midland Barge Co., Midland, Pa., low, $6305.

Strip

Specifications Are in Small Volume—Automotive Increase Is Small—Prices Fairly Steady

STRIP PRICES, PAGE 49

Pittsburgh—Strip producers so far have felt little effect from automotive sales activities, recent specifications continuing in small volume. Automotive requirements show little change from a month ago and only a moderate increase is looked for this month. Production is slightly lower at 20 per cent. Prices are fairly steady at 1.40c to 1.50c and 1.50c to 1.60c for hot strip and 2.00c for cold-rolled.

New York—The 2.00c, Pittsburgh, price on cold-rolled, which represents the only real advance in strip prices, is holding, subject to the test of a more active demand. Hot-rolled strip is 1.40c and 1.50c, Pittsburgh, on the wide and narrow, respectively.

Philadelphia—Hot-rolled strip is steady at 1.40c and 1.50c, Pittsburgh, for carload lots. Cold-finished is 2.00c, Pittsburgh. Trading in both grades is dull.

Youngstown, O.—Sufficient releases are being received from stampers, automotive partsmakers and miscellaneous consumers to keep hot-rolled mills well employed. Cold-rolled mills are doing almost as well in a number of instances. Quotations continue firm and further test of the second quarter quotations does not appear imminent.

Cleveland—A local strip mill has received some releases from Ford Motor Co., calling for side rails, running boards and fenders. Thus, its finishing mills were put on late last week and involved about four days run on the 20-inch strip mill as well as three to four days' operation on the cold-rolled strip mill. Prices at 1.40c and 1.50c, Pittsburgh, are well held, but cold-rolled is still unsteady at a minimum of 2.00c, Cleveland.

Operations Touch Year's Low at 22 Per Cent

Pittsburgh—Iron and steel production continues to record minor losses. Blast furnace operations are at a new low for the year with 9 steelworks stacks active of 54, a reduction of two from the recent figure. Ingot output declined to 21 per cent the past week, compared with over 22 the previous week. Sheet mill schedules are unchanged at 25 with tin plate holding at 45. Strip production is lower at 20 and pipe at 15 to 20.

Philadelphia—Although a leading steel producer in this district is operating at about 22 per cent, the average for all plants combined shaded a half point to 15-16 per cent last week. The outlook is unpromising.

Buffalo—Buffalo district operations continued at approximately 38 per cent during the week ending April 9, in spite of complete suspension of operations in one district works. Another will probably produce no ingots this week because of staggered schedules, and a drop to about 25 per cent seems probable. Last week 13 open hearths were in production with nine or more scheduled this week.

Operations, week ended April 9	**22**
Operations, week ended April 2	**23**
Operations, week ended Mar. 26	**23**
Operations, this week, 1931	**51**
High for 1932,, Feb. 6	**28.5**
Low for 1932, Jan. 2	**22**

Youngstown, O.—Steel production here last week averaged 20 per cent, off five points from the week prior. However, the rate is expected to rebound several points this week on resumption of an open-hearth plant. An average of 13 of 68 open hearts in the Valley operated last week. Strip production is lower for one producer and sheet output is irregular.

Cleveland—Steel mill operations here rebounded three points last week, up to 26 per cent. This week they will likewise be at 26 per cent. Otis Steel Co. has started up two open hearths, in part on some Ford Motor business which came through last week. American Steel & Wire Co. is operating three open hearths, down one from week before last. Corrigan, McKinney Steel Co. continues with four open hearths on. There are four active blast furnaces here, some of which are on reduced blast.

Chicago—Ingot production will be off a shade this week from the week just closed. Production is 20 to 22 per cent. Steelworks blast furnace activity is unchanged, with nine of 36 stacks active. Inland Steel Co. continues to operate two of its four blast furnaces.

Birmingham, Ala.—With two of six open-hearth furnaces on, steel operations based on ingot production, hold at 21 per cent of capacity. Tentative date for resumption of operation of the Ensley, Ala., works of Tennessee Coal, Iron & Railroad Co. which will include six open-hearth furnaces, is now given as April 18, provided business is received in the interim.

Warehouse Buying Light; Atlantic Imports Hurt

New York—Dullness continues in demand for steel from warehouse, with prices unchanged. Second quarter requirements of several New York city departments have been placed below some listed quotations. Foreign steel is an increasing factor, unsettling prices and extra schedules.

Boston—Warehouse prices are nominally unchanged, with few items tested. There has been little increase in volume. An anticipated advance on bolts has not yet materialized.

Philadelphia — Galvanized sheet prices have been advanced $5 per ton by jobbers, to 3.75c. This follows a reduction of the same size a few weeks ago in the effort to remedy a local condition. The market is quiet.

Baltimore—Warehouse demand is sluggish with prices on domestic steel unchanged. Foreign competition is more prevalent.

Pittsburgh—April shows practically no change from the March volume of business. Prices of bars and plates are steadier, with all quotations unchanged.

Detroit — Buying of steel from warehouse has failed to expand so far in April from the depressed rate of any of the first three months of 1932. Hope is held out that automobile production will turn up this month.

Cincinnati—Jobbers report sales volume comparable with March, but inquiries lessening. Demand for road improvement materials is lighter than early in 1931. Quotations are unchanged.

Chicago—Warehouse sales show a downward trend. Wire goods are not moving in substantial volume. Jobbers still quote 73 off for machine bolts, despite the advance in producer prices.

St. Louis — Improvement in demand from warehouse is lacking.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.00
Pittsburgh, dist. fur.	15.50 to 16.00
Pittsburgh, delivered	16.13 to 17.13
Valley furnace	15.00 to 15.50
Cleveland fur., local del.	15.50
Philadelphia, delivered	15.26 to 15.76
Virginia furnace	17.50
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.40 to 19.90
Buff., all-rail, Newark	17.78 to 18.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.76 to 16.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	16.26 to 16.76

MALLEABLE

Valley furnace	15.50
Cleveland fur., local del.	15.50
Pittsburgh dis. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Chicago, furnace	16.00
Buffalo fur., local del.	15.50 to 16.00
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Eastern Penn., del.	15.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	15.50 to 15.75
Pittsburgh, delivered	16.63 to 17.13
Pittsburgh, furnace	16.00

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	15.00
Pittsburgh district fur.	15.50
Pittsburgh, delivered	16.13 to 16.63

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.76 to 9.16
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	9.50 to 10.00
North African low phos.	8.00 to 9.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$10.75 to 11.00
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	23 to 24 cents
South African, 49-51%	22 to 23 cents
South African, 44-47%	21.00 to 21.50
Indian, 48-50% (nom.)	24 cents
Brazilian, 46-48% (nom.)	20 to 21 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00
Pittsburgh, bessemer	27.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	32.75
Chicago	28.00
Forging, Chicago	34.00 to 35.00
Forging, Pittsburgh	33.00 to 34.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	27.00

SLABS

Pittsburgh	27.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	80.24
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	85.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.	113.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	19.50

Pig Iron

Shipments Slower, Except to Automotive Industry — Price Situation at Chicago Easier

PIG IRON PRICES, PAGE 56

Pittsburgh — Pig iron business consists almost entirely of carload orders, with the volume lacking improvement. Shipments also have tended downward slightly over the past several weeks. Foundry operations are near the lowest level for the year to date and pig iron consumption by nonintegrated steel producers has declined since the first of the year. Competition still is encountered from outside producers and prices are subjected to occasional concessions. Nominal quotations are $16, Pittsburgh, for No. 2 foundry, bessemer and malleable.

Boston—Pig iron sales continue light and largely for truck delivery. The New England pipe foundry has purchased a small lot. Prices are unchanged with the local producer averaging $17, furnace, and moving several hundred tons during the week. Buffalo iron is moving at $14.50, base, furnace, and foreign iron continues to move at $16, delivered at points near storage. A small lot of charcoal iron is reported enroute from India for a Connecticut consumer.

New York—Little improvement is noted in pig iron buying with the week's sales totaling 1500 tons. Buffalo and eastern Pennsylvania irons continue $14.50 to $15, furnace, although Royal Dutch iron is scheduled for an advance, due, it is said, to the increase in Sterling, on which basis iron ore is bought abroad. Approximately 1250 gross tons of Royal Dutch iron arrived in Hoboken, N. Y., recently as ballast on the VOLENDAM.

Philadelphia—Approximately 4000 tons of English iron arrived here in the past week, believed to be the first shipment on an order for 20,000 tons, noted early in the year as placed by a Delaware river pipemaker. Recent developments indicate certain large consumers are willing to buy iron, but prices mentioned are too low to attract sellers. Basic is nominally easier at $15, delivered. Eastern Pennsylvania foundry iron generally is $14.50, base, furnace, with occasional orders at $15. Royal Dutch iron has been advanced 50 cents a ton.

About 11,200 tons of Royal Dutch iron was received here recently, part of which will be stored.

Buffalo—Demand continues slow. Large inquiry is lacking. March sales and shipments were as low as those of any month in the past ten years, some makers report. The district price is being maintained firmly and no effort is being made by sellers here to compete with foreign iron offered in the East.

Youngstown, O.—Sales and shipments of No. 2 foundry and malleable pig iron hold at about level with preceding weeks' activities. New business is slow, but shipments are fair. Quotations are unchanged.

Cleveland—The pig iron market continues dull, with sales by furnace interests with headquarters in Cleveland amounting to approximately 3000 tons for the week. It is understood some substantial tonnages are being considered by one or two consumers, but negotiations are in a tentative stage. Cleveland foundries are buying carload lots occasionally. Shipments to the automotive industry are increasing gradually, the brightest feature of the market. Prices hold at $15.50, base, Cleveland furnace, for local shipment, and usually $15 for nearby delivery.

Cincinnati—Shipments of pig iron have been declining for several weeks, with only a few carload orders comprising new business amounting to less than 1000 tons. The sale of one car of 8 per cent slivery iron indicates a price of $21.02, delivered Cincinnati.

Chicago—Aside from prospects of heavier malleable shipments this month, little encouragement is offered in the merchant pig iron market. Individual orders chiefly govern quotations. Owing to recent orders below the nominal base price, $16 now is regarded as the base, a reduction of 50 cents. Scattered spot orders constitute the only business. Jobbing foundry schedules in this district average about two days a week. Merchant furnaces have been running the smallest output at this season in 20 years.

St. Louis—Pig iron sellers look for larger demands from autmotive, farm implement and railroad equipment foundries in a few weeks, as inquiries have developed. Foundries specializing in automotive castings report moderate improvement in releases. Sales at present are small, and prices unchanged.

Toronto, Ont. — Business in the Canadian pig iron market is picking up slowly but steadily. Sales in the past week totaled 600 tons. With the blowing in of a stack at Sault Ste. Marie, Ont., two Canadian furnaces now are operating.

Birmingham, Ala.—A further reduction in output is noted. Little iron is being shipped out of southern territory. Prices are steady.

Ferroalloy Shipments Improve in East

Ferroalloy Prices, Page 56

New York—The past week has shown an increase in ferromanganese specifications, reflecting principally, it is believed, improved activity in the automotive field. The market is $75, duty paid, on lots up to 1000 tons. Domestic spiegeleisen, 19 to 21 per cent, is unchanged at $27, furnace.

Pittsburgh—Specifications for ferroalloys continue at about the smallest volume for the year, shipments of ferromanganese and spiegeleisen recently having tended downward slightly. The spot market is particularly dull with prices on small lots unchanged at $75 for ferromanganese and $27, furnace, for spiegeleisen. Ferrotungsten is slightly easier with $1 the usual minimum price.

Chicago — Ferroalloys shipments are continuing at the rate of late March. Ford Motor Co. has issued some additional releases. Prices are unchanged.

Semifinished Steel Movement Is Slower

Semifinished Prices, Page 56

Pittsburgh — Semifinished steel shipments are off slightly and new business is confined to small spot orders, with little change noted in volume. The market continues $26 to $27 for billets, sheet bars and slabs, but quotations are untested. Forging billets are $33 to $34 and wire rods $37.

Youngstown, O.—Billets and sheet bars, and slabs occasionally, are moving from producing mills as consumers receive specifications for their products. The market is dull, but quotations are unchanged at $27, Youngstown, Pittsburgh and Cleveland, for billets and slabs; and $26 for sheet bars.

Chicago—Forging plants and mill users have bought little semifinished steel recently. Shipping orders for sheet bars to the Detroit area have not picked up appreciably. Sheet bars are nominal at $27, Chicago.

Scrap

Dull Market and Nominal Prices General—Chicago Finds Better Buying of Steel Grades

Chicago—More cheerful sentiment prevails in the steel and iron scrap market following three weeks of improved shipments of steelmaking grades. The more bullish sentiment is due in part to reported prospects for automotive business among steel producers. No heavy melting steel has been sold for 30 days and no consumer bookings of importance have been noted in two weeks. Melting steel is nominal at $6.75 to $7.25. There are heavy cast borings accumulations at the East Chicago lake docks. Few foundry inquiries are out.

Boston—All grades of scrap are dull, New England and outside shipments being light. Prices are untested, heavy melting steel remains nominally $6.25, delivered, central

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.00 to 7.50
Boston, dealers	4.00 to 4.25
Buffalo, No. 1	8.00
Buffalo, No. 2	6.25 to 6.50
Chicago	6.75 to 7.25
Cinci., deal.	6.75 to 7.25
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.00 to 4.50
E. Pa. del. mill	7.00 to 7.50
N. Y. deal. R. R.	4.50 to 5.00
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	7.00 to 7.50
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	10.00

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.50
Chi. (Factory)	5.75 to 6.25
Cleveland	7.00 to 7.25
Detroit, dealers	5.75 to 6.25
E. Pa. new mat.	6.50 to 7.00
Pittsburgh	9.75 to 10.25
Valleys	9.50 to 10.00

BUNDLED SHEETS

Buffalo	5.25 to 5.50
Cinci., deal.	6.00 to 6.50
Cleveland	6.00 to 6.50
Eastern Pa.	5.50 to 6.00
Pittsburgh	8.50 to 9.00
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	3.50 to 4.00
Cincinnati	3.50 to 4.00
Detroit, dealers	3.00 to 3.75
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	11.00 to 11.50
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 11.00
Chicago (3 ft.)	8.50 to 9.00
Chicago (2 ft.)	9.50 to 10.00
Cinci., deal.	10.50 to 11.00
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.00 to 12.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	4.50 to 5.00
Buffalo	8.50 to 8.75
Chicago, net	5.75 to 6.25
Cinci., deal. net	4.00 to 4.50
Det., net deal.	3.00 to 3.50
Eastern Pa.	7.00
N. Y., deal. mill	4.00 to 4.50
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	9.75 to 10.25
Chicago	8.00 to 8.50
Eastern Pa.	8.50 to 9.50
Pittsburgh	10.50 to 11.00
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	7.50 to 8.00
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.00 to 11.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	10.00 to 11.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts., sheet bar crops	12.50 to 13.00

FROGS, SWITCHES

Chicago	6.75 to 7.25
St. Louis	7.50 to 8.00

SHOVELING STEEL

Chicago	6.75 to 7.25
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	6.50 to 7.00
Boston, dealers	6.50 to 7.00
Buffalo, No. 1	5.00 to 5.50
Buffalo, No. 2	8.00
Chicago, No. 1	6.25 to 6.70
Chicago, No. 2	6.75 to 7.25
Cinci., No. 2	6.50 to 7.00
Eastern Pa.	8.00
N. Y., No. 1, deal.	5.00 to 5.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	8.50 to 9.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	6.25 to 6.50
Chicago, No. 1	5.25 to 5.75
Cinn., No. 1 dl.	4.75 to 5.25
Cinn., No. 2	3.00 to 3.50
Cleve., No. 2	4.25 to 4.50
Det., No. 1 new deal.	5.00 to 5.50
St. L., No. 1	5.00 to 5.50
Val. new No. 1	9.00 to 9.50

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.05 to 1.55
Buffalo	4.75 to 5.25
Chicago	4.00 to 4.25
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit	3.50 to 4.00
Eastern Pa.	4.00 to 4.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	7.00 to 7.50
St. Louis	2.50 to 3.00
Valleys	7.25 to 7.75

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	.90 to 1.00
Buffalo	6.00 to 6.25
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.75 to 7.25

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	5.50 to 6.50
Boston, dealers	1.00 to 1.25
Buffalo	5.75 to 6.25
Chicago	4.50 to 5.00
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.00 to 11.00
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.75 to 7.25
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	4.00 to 4.50

RAILROAD GRATE BARS

Buffalo	5.25 to 5.75
Chicago, net	5.50 to 6.00
Cincinnati	4.50 to 5.00
Eastern Pa.	7.00
N. Y., deal.	4.00 to 4.50
St. Louis	5.25 to 5.75

FORGE FLASHINGS

Boston, dealers	3.00 to 3.50
Buffalo	6.25 to 6.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.00 to 5.50

FORGE SCRAP

Boston, dealers	2.00 to 2.25
Chicago	9.50 to 10.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	6.25 to 6.75
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	6.75 to 7.25
Chi., steelworks	5.75 to 6.25
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00 to 8.00
Pittsburgh, O. H.	8.50 to 9.00
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	11.00 to 11.50
Boston, ship. pt.	9.00 to 10.00
Buffalo	12.00 to 12.50
Chicago	11.25 to 11.75
Eastern Pa.	14.50 to 15.00
St. Louis	10.50 to 11.00

SHAFTING

Boston, ship, pt.	8.50 to 9.00
Chicago	7.30 to 7.85
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	13.00 to 14.00

CAR WHEELS

Birming. iron	8.00 to 9.00
Boston, iron	10.00 to 11.00
Buffalo, iron	9.25 to 9.75
Buffalo, steel	9.75 to 10.25
Chicago, iron	7.00 to 7.50
Chi., rolled steel	8.50 to 9.00
Cincinnati iron	8.50 to 9.00
E. Pa. steel	8.50 to 9.00
E. Pa. iron	9.50 to 10.00
Pitts. iron	10.00 to 10.25
Pitts., steel	10.50 to 11.00
St. Louis, iron	6.00 to 6.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	7.00 to 8.00
Buffalo (Mach.)	9.50 to 10.00
Buffalo, cupola	8.50 to 9.00
Boston, textile	8.00 to 8.50
Chicago, mach.	8.40 to 8.95
Chi., railroad	7.00 to 7.55
Chicago, agri.	6.45 to 7.00
Cinn., mach. cup	8.50 to 9.00
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	9.50 to 10.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	11.00
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston, del.	4.00 to 4.25
Bost., mach. cast	7.50 to 8.00
Buffalo, break.	8.00 to 8.50
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.00 to 10.50
Det., break., dl.	4.75 to 5.25
Eastern Pa.	9.00
N. Y. No. 1 dl.	5.50 to 5.75
N. Y. break, dl.	5.00 to 5.25
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	8.00 to 8.50
Buffalo	9.00 to 9.50
Chicago, agri.	6.50 to 7.00
Chicago, R. R.	6.50 to 7.00
Cinci., R. R. del.	8.75 to 9.25
Cinci., agri. del.	8.50 to 9.00
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.00 to 9.50
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING
5 feet and over

Birmingham	9.00 to 10.00
Boston, deal.	5.50 to 6.00
Buffalo	8.50 to 9.00
Chicago	9.50 to 10.00
Eastern Pa.	9.50 to 10.00
New York	5.25 to 5.75
St. Louis	9.00 to 9.50

LOCOMOTIVE TIRES

Chicago, cut	8.00 to 8.50
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	9.50 to 10.00
Buffalo	10.00 to 11.00
Eastern Pa.	10.00 to 11.00
Pittsburgh	11.00 to 11.50

Massachusetts, with bundled skeleton $4.50.

New York—One dealer is reported paying $5.50 for No. 1 steel for export to Japan, a consumer having raised its price on this grade for barge. Under $4 is offered for No. 2 for shipment to Weirton, W. Va. Shipments and buying are light and little scrap went out of this district toward the recent purchase at Pittsburgh, although $4.50 is paid on what tonnage is moving to that district.

A Buffalo consumer has withdrawn from the market on No. 2 heavy melting steel at $4, barge, but is paying $5.50, barge, for No. 1.

Philadelphia—Buying of steel and iron scrap is confined to small lots and prices have undergone no change. In steel and most cast grades trading is at a standstill.

Buffalo—Dealers fear the drop in demand for scrap in other districts, with continued absence of major purchasing here, may force downward the nominal level of $8 a ton which has prevailed for No. 1 heavy melting steel for several months. Stove plate is scarce and the most active grade.

Pittsburgh—The scrap market is quiet and recent business has developed no changes in quotations. Heavy melting steel remains $10 to $10.50, with compressed sheets $9.75 to $10.25. Heavy melting steel on the monthly list of the Baltimore and Ohio railroad is understood to have brought slightly less than $10.50.

Cleveland — Pressure for lower prices has not succeeded and nominal quotations are unchanged. A shipment of compressed sheets by water from Detroit was a feature of the week. Some deliveries are being made but buying is small.

Detroit—Steel and iron scrap is dull and prices are unchanged. Some movement by water has begun with the opening of navigation.

Cincinnati—The market for iron and steel scrap is stagnant. Shipments against contracts are light and buying is rare. Dealers' quotations on sheet clippings tend lower.

St. Louis—Activities in iron and steel scrap have dwindled to insignificant proportions, trading in April being in smaller volume than since the present slump started.

Birmingham, Ala.—Trading is almost absent and prices are at the low levels of recent weeks.

Toronto, Ont.—Some improvement is noted in steel scrap sales, with shipments to Sault Ste. Marie and other consumers in Ontario and Quebec. The Hamilton mills are still out of the market. Most new scrap is in iron grades with machinery cast most favored. Dealers report a shortage of machinery cast and are bidding for supplies when offered. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Alloy Steel Scrap Rule Is Being Extended

Alloy steel scrap is presenting problems to the industry and recognition of its advantages and disadvantages is coming to the front. A conference called by the department of commerce in connection with the annual convention of the Institute of Scrap Iron and Steel Inc., at Washington, March 9, to consider revisions in the uniform scrap classification, approved a number of recommendations relative to alloys.

One recommendation was that the classification for mill scale should eliminate the requirement to contain not less than 65 per cent metallic iron. Other recommendations are to provide that "alloy steel scrap may be excluded from these specifications by mutual agreement between buyer and seller" be added to some 24 items of the classification.

A standing committee now being formed from representatives of various interested bodies has been given the task of formulating a definition of alloy steel scrap.

Burned annealing pots may be placed on a mill cinder and scale freight basis, on the ground they contain a small iron content and are used in blast furnaces like cinder and scale. The present rate is too high to allow them to be moved. It is estimated 2500 tons are lying useless in New England and 2000 tons in Illinois, Ohio and Michigan. New England Trunk Line and Central Freight associations have been asked to give a lower rate.

Coke

Foundry and Furnace Requirements Continue Slow—Domestic Sales Slacken; Prices Easier

COKE PRICES, PAGE 56

Pittsburgh—Activity in the coke market has moderated, demand for domestic heating fuel declining sharply while foundry requirements for metallurgical purposes are slightly lower. Furnace coke continues inactive with the spot market nominal at $2.25. Foundry coke continues $3.25 to $4.50.

Boston—Foundries, operating in few instances better than 30 per cent, are specifying sparingly. By-products foundry coke is unchanged at $10.50, delivered.

New York—Metallurgical coke is moving slowly, with beehive furnace coke easier at $2.25 to $2.50, Connellsville, on standard grades. Beehive foundry coke is $3 to $3.25, Connellsville, for standard grades, and $4 to $4.50, Latrobe, Pa., for premium brands. The lower price is quoted by one seller whose ovens are said to be closed and who is shipping from stock. By-product foundry coke is unchanged at $8.76 to $9.16, delivered Newark, N. J.; $10.50, New England: and $8.75, Philadelphia.

Cincinnati—Fairly good response to reduced prices is reported in the domestic coke market. Shipments of by-product foundry are low.

Chicago—By-product coke shipments continue at the February-March level. Metallurgical coke is unchanged at $7.50, local ovens, but domestic coke has been reduced $1, to a $6 base.

St. Louis—New orders for metallurgical and industrial coke are at a minimum, but foundries' stocks are known to be extremely light, and an expected improvement in the melt may be felt immediately in the coke.

Birmingham, Ala.—Demand for heating coke is diminishing, while that for foundry fuel is improving as melters receive new orders for spring delivery. Prices are unchanged.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

Sheets	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, cut, to jobbers	6.50
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.75
Seamless copper	14.87½
Rods	
Yellow brass (high, full turnings)	10.25
Naval brass	11.37½
Anodes	
Copper untrimmed	12.25
Wire	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	3.25 to 3.50
Chicago	2.75 to 3.00
Cleveland	3.00 to 3.25
St. Louis	2.75
Heavy Yellow Brass	
New York	2.00 to 2.25
Heavy Copper and Wire	
New York	4.00 to 4.25
Boston	4.50 to 4.75
Chicago	2.75 to 2.87½
Cleveland	3.00 to 3.50
St. Louis	3.00
Composition Brass Borings	
New York	3.00 to 3.25
Yellow Brass Tubing	
Cleveland	1.75 to 2.25
Light Copper	
New York	3.25 to 3.50
Chicago	2.37½ to 2.62½
Cleveland	2.75 to 3.00
St. Louis	2.75
Light Brass	
Boston	1.65 to 1.85
Chicago	1.37½ to 1.62½
Cleveland	1.25 to 1.50
St. Louis	1.50
Lead	
St. Louis	2.00
Zinc	
New York	1.00
Cleveland	1.00
St. Louis	1.00
Aluminum	
Clippings, new, soft, Cleve.	10.50 to 11.00
Clippings, hard, Cleveland	7.00 to 8.00
Borings, Cleveland	2.75 to 3.25
Mixed cast, Cleveland	4.00 to 4.50
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt, aluminum No. 12	8.00 to 9.00
Brass ingots, 85-5-5-5	6.12½

Metals

Easiness Develops in Copper, Tin and Antimony but Other Metals Remain Steady

New York—Easiness developed in tin, copper and antimony last week. Other metals held unchanged. Demand in general continued quiet.

Copper—Custom smelters again were offering electrolytic metal at 5.75c, delivered, Connecticut, equalling the record low previously touched. The cut was prompted by prolonged dullness in demand from consumers both here and abroad and occurred despite the further curtailment of production which was effected April 1. According to unofficial reports, refined stocks of copper were cut 3000 tons in February and a similar amount in March. Mine producers last week continued out of the market.

Copper for export was offered at the special price of 6.00c, European ports, but demand was not up to expectations. Brass ingot quotations were reduced 1/8-cent but copper and brass products remained unchanged. Interest in the trade has been centered on developments with regard to a copper import tariff. The tax bill passed the House without the addition of a copper tariff amendment but it is expected that one may be added in the Senate. A duty of 5 cents a pound is asked.

Lead—Demand was fairly active during the week at the unchanged quotations of 2.90c, East St. Louis, and 3.00c, New York. April needs are estimated to be approximately 80 per cent covered but much remains to be purchased for May consumption.

Zinc—Tone of the market was steady although trading continued quiet. Producers were able to maintain a good statistical balance last month with stocks showing a decline of 83 tons. Contemplated reduction in refinery output aided price steadiness.

Antimony—The market was dull with prices fractionally lower.

Tin—Straits tin quotations fell to the lowest levels since 1898 last week in sympathy with weakness in the London market due to liquidation by foreign holders. Consumers showed only mild interest even with prices at new depression lows and below importers' costs.

Aluminum—Prices continued unchanged but sales remained in small volume.

Coke By-Products Are In Larger Demand

New York—Current production of distillates is being well absorbed by demand, which shows a slight improvement. A shortage prevails in toluol and xylol.

Naphthalene shipments are gradually increasing. Phenol reflects a slight gain in buying by the drug trade. Sulphate of ammonia continues seasonally active, with $22 a ton, seaboard, covering the bulk of volume.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10

Quicksilver Is Quiet

New York—Quicksilver prices are easy here, with small lots quoted nominally $74 to $76, a virgin flask of 76 pounds. The market is quiet.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
April 2	6.00	6.12½	5.75	20.10	20.55	3.00	2.90	2.80	22.90	6.12½	35.00
April 4	6.00	6.12½	5.75	19.60	20.05	3.00	2.90	2.80	22.90	6.00	35.00
April 5	6.00	6.12½	5.75	19.50	19.90	3.00	2.90	2.80	22.90	6.00	35.00
April 6	5.75	6.12½	5.50	19.25	19.65	3.00	2.90	2.80	22.90	6.00	35.00
April 7	5.75	6.12½	5.50	19.15	19.55	3.00	2.90	2.80	22.90	6.00	35.00
April 8	5.75	6.12½	5.50	18.75	19.15	3.00	2.90	2.80	22.90	6.00	35.00

LONGER COIL STRIP WAS TRIED . . . IT PROVED MORE ECONOMICAL . . . STAMPING WAS SPEEDIER, EASIER

In several instances lately, "Sharon Specifications" service engineers have suggested the use of long coils rather than short coils of strip steel. These suggestions have been based on personal observation and study of the manufacturers' operating facilities. This change has effected substantial economies for customers—such as time-saving, due to less coil changing; speedier feeding to presses; and less waste, through more continuous run of material for stamping. ▼ This is but one (and a simple one), of many practical engineering services that Sharon offers to the fabricators of strip steel.

For, to Sharon, the making of high quality, correctly specified steel for your particular requirements is only half the job. Helping you to utilize it with greatest economy for best product results is the other half. ▼ This is the full meaning of the term "Sharon Specifications" . . . correct steel plus helpful engineering service. One of our representatives will be glad to tell you in detail how "Sharon Specifications" work with you on your strip steel problems. Make use of this service — drop us a line.

SHARON STEEL HOOP CO., SHARON, PA.

SHARON

Hot and Cold Rolled Strip Steels

"Enamelite" Enameling Iron

"Nevastain" Stainless Steels

Steel Sheets

Machinery

NO ENCOURAGING symptoms have appeared in a suffering equipment market, with inquiries at a low level and sales continuing scattered and unimportant. Practically the only inquiry of any size is a navy department list for a number of lathes, bids closing April 19. Some builders of heavy steel mill machinery report a promising number of inquiries arising over the past three months, but regard action on them as problematical. Several western railroads are expected to buy track welders for maintenance work shortly. Prices generally appear firm although instances of shading on equipment for public projects are reported.

New York — Equipment sales and inquiry are light, showing little improvement thus far over March, a dull month in this territory. Manufacturing schedules in the metalworking and other industries, showing a minimum of the usual seasonal spurt, curtail interest in new equipment. Sales are limited to a scattering of individual tools, generally placed after sharp competition in which prices suffer. Inquiry is light, some business, appearing favorable earlier in the year, having been withdrawn. More dealers and builders than usual are figuring on the navy inquiry closing April 19, although a good part of the list is for delivery outside this district.

Chambersburg Engineering Co. has been awarded one drop forge hammer for the Boston navy yard shops at $5328. Additional awards for various shop yards include: Jones & Lamson Machine Co., eight turret lathes, four Puget Sound, $4302.91, and four Mare Island, $3966.29; Buss Machine Works, Holland, Mich., one planer, Norfolk, $3270; Tidewater Supply Co. Inc., drill, Norfolk, $10,655; Rivet, Lathe & Grinder Corp., screw cutting lathe, Washington, $1392.75. Westinghouse Electric & Mfg. Co. is low on a welding outfit for Panama at $9978 and Warner-Dessan Inc., New York, is low on a pipe threading and cutting machine for Philadelphia.

Worcester, Mass. — Demand for machinery continues almost negligible. Automobile sources apparently have been covered for the present although future developments in the industry may give rise to further bookings here.

Reed Prentice Corp. has closed on several saws for railroads but carriers show no tendency to book orders for other tools. Some inquiry is outstanding for lathes and drills for school jobs but none is for immediate closing.

Pittsburgh—The trend in demand for machine tools and plant equipment remains stationary, while some improvement is noted in the outlook. Prospective work is fairly large and although considerable of this has not advanced to the point where actual inquiries are pending there is a broadening interest in the necessity for plant improvements. Some builders of heavy steel mill equipment report a large gain in number of inquiries on books over the past three months, but it is regarded as problematical as to when action will be taken on such work. In some cases, it is believed, orders will be deferred until general conditions improve.

The volume of incoming business shows only minor fluctuations. Steel companies and railroads are making few purchases of the commoner types of machine tools and these usually are for urgent requirements. Inquiry from such interests is scattered and no large lists are in early prospect.

Cleveland — Watchful waiting seems to be the policy of sellers of machinery and equipment in this territory, one manufacturer's representative reporting that all travel expenses have been foregone temporarily. Inquiries and sales are practically at a standstill. Some improvement in the immediate future is discerned by a prominent builder of welding equipment who reports that although first quarter business was disappointing, prospects for the next few months are somewhat brighter. This interest states that pressure against prices is being resisted successfully, no general reductions having been made.

Cleveland Automatic Machine Co. reports a defiicit of $214,080 for 1931, against net income of $2964 for 1930.

Chicago—Beginning of second quarter finds few fresh prospects of consequence in the machine tool and equipment markets. Few agencies expect any immediate gains from the low level of the business during first quarter. Sheet metal working equipment sales in recent weeks have shown a little life. An order has just been closed for about $6000 in power brake equipment for a buyer north of here. Shearing equipment also has been more active. More interest is being shown in used equipment than in new tools, but only a light volume of business is noted. A few sales of welding equipment have been made in the last few days, while several western railroads are expected to buy track welders for maintenance work shortly. Local machine tool dealers are preparing to submit bids for about eight machine tools to be purchased by the navy department. Except for public projects, prices are steady for machine tools.

Molten Metal Sprayer Prevents Corrosion

Spraying of molten corrosion-resisting metal on iron, steel and other parts subject to corrosion is accomplished by a process recently perfected by a Swiss engineer, according to word received by the iron and steel division of the department of commerce, Washington, from a commercial attache in Paris. The development is being sponsored by the Societe Nouvelle de Metallisation, Paris, and involves the use of a "pistol" weighing slightly under 5 pounds, which in appearance and operation is a combination oxyacetylene torch and pneumatic atomizer.

A wire of the plating metal is fed into the pistol automatically, rendered molten by action of the oxyacetylene torch and sprayed upon the object to be plated by the atomizer. An unusual feature claimed for the operation is that this molten metal can be sprayed on any object or surface whatsoever including paper, as the spray is reported to have cooled sufficiently upon reaching the surface to be coated that no damage is caused even to the most inflammable materials.

Forged Tools Classified

Simplified practice recommendation R17-31 for forged tools has been approved by the industry for promulgation by the department of commerce through the division of simplified practice of the bureau of standards. Copies of the revised recommendation, containing a simplified list of 431 forged tools, may be obtained from the government printing office, Washington, for 15 cents.

Irving Block & Die Co., 7 West Thirty-sixth street, New York, has increased its capitalization from $5000 to $25,000.

HIGH PRESSURE PIPING—

for the most exacting service

The increased demands upon modern power plants make successful operation of them depend more and more upon the reliability of the pipe materials.

NATIONAL Seamless Pipe is in particular favor with engineers and operating men where higher pressures and higher temperatures are involved. They find in it all the required qualities, and find these qualities both uniform and unfailing.

NATIONAL Seamless is favored also because it is always workable and accommodating where coils, bends, flanges or cross-overs have to be made—its stamina is not affected by the necessary working in such installations—and it is readily joined by welding.

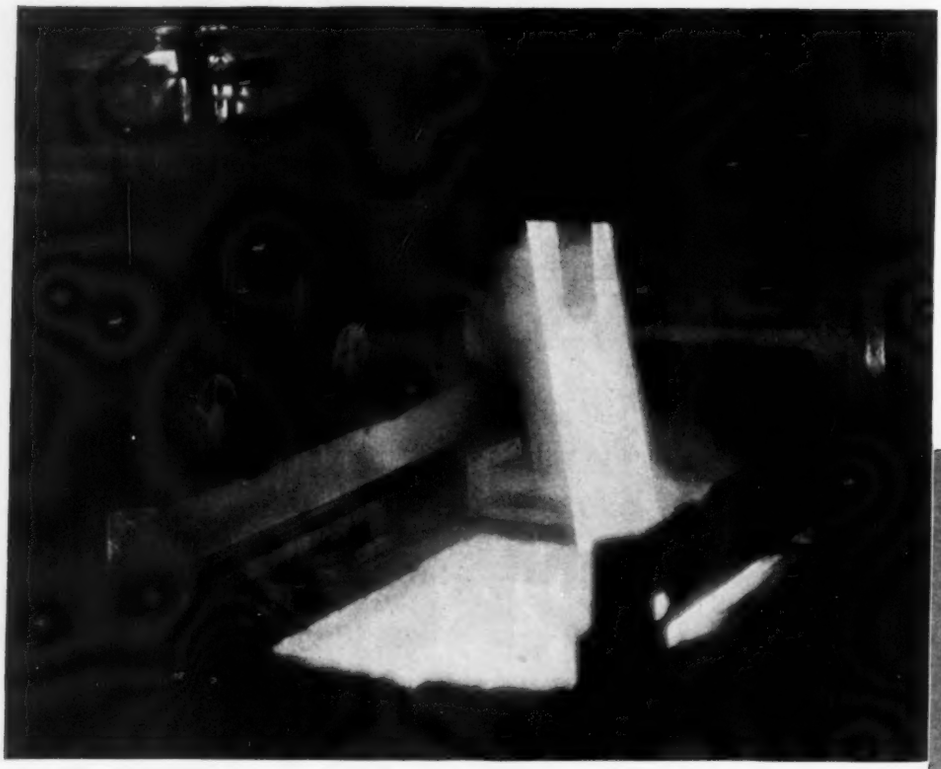
Therefore, for new projects or replacements, you are sure of maximum value if you specify NATIONAL Seamless—

America's Preferred Seamless Pipe

NATIONAL TUBE COMPANY, Pittsburgh, Pa.
Subsidiary of United States Steel Corporation

NATIONAL SEAMLESS

INTO THE SOAKING PIT

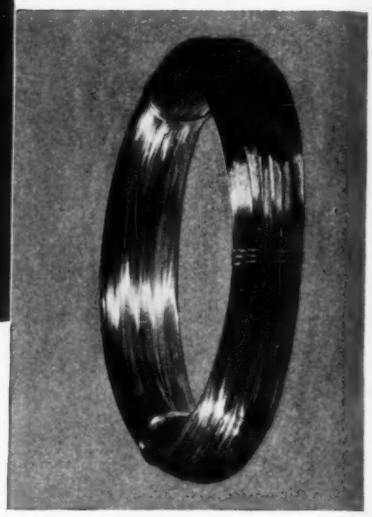


There the ingot must remain until the molten center cools and the metal comes to a uniform temperature . . . then it is rolled into billets . . . billets in turn rolled into rods . . . rods drawn into wire . . . all in the Wickwire Spencer Mills under one control . . . under one management. Wissco Wire, exclusively the product of the Wickwire Spencer Steel Company, is of the highest quality in its every type and kind. Its uniformity has long been proverbial in wire working industries.

Wickwire Spencer Steel Co., 41 East 42nd Street, New York City

Buffalo, Chicago, Detroit, Philadelphia, Tulsa, Worcester; *Pacific Coast Headquarters:* San Francisco; *Branches and Warehouses:* Los Angeles, Portland, Seattle. *Export Sales Department:* New York City

WICKWIRE SPENCER



WISSCO WIRE

Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft, or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wires—Valve Spring—Music—Clip—Pin—Hairpin—Hook and Eye—Broom—Stapling—Bookbinding—Machinery Spring Wire—Reed Wire—Clock—Pinion—Needle-Bar—Screw Stock—Armature Binding—Brush—Card—Florist—Mattress—Shaped—Rope—Welding. Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires. Consult the Wissco technical man on your wire problems, however large or small.

Wissco Wire *by Wickwire Spencer*

Pacific Coast

Steel Buying Below Normal and Pending Tonnage Smaller than Usual—Some Small Lots Taken, Mostly for Public Projects—Steel Needed for Freight Car Underframes—Prices Steady

Seattle—Steel tonnages pending in the Pacific Northwest are below normal and still consist almost entirely of public projects.

Awards this week included 455 tons of reinforcing bars, booked by Pacific Coast Steel Co., Seattle, 325 tons for the Fairbanks, Alaska, post office, and 130 tons for a paving job in eastern Washington. The soldiers' home project, Roseburg, Oreg., Murch Bros. Construction Co., St. Louis, low at $549,600, involves 650 tons of reinforcing bars and also considerable structurals. L. Coluccio & Co., Seattle, is low bidder for the Wippel pumping plant and penstock, a reclamation project near Ellensburg, Wash., involving 185 tons of plates. McNeill Island, Wash., warden will open bids April 7 for a steel water tank and tower. Seattle is contemplating replacing wood water mains with steel pipe, to cost $600,000. The state will open bids April 26 for a 572-foot cantilever span in Snohomish county.

Some export demand for steel scrap has developed, Japanese interests having purchased 10,000 tons at Vancouver, B. C., here and Portland, Oreg. The local shipment comprises 8000 tons of battleship scrap, said to have been purchased at less than $6, f.o.b., to be used in reconstruction in Manchuria. About 8000 tons of similar material are still on hand here. Locally there is no improvement in the scrap market.

All Tonnages Small

San Francisco—(*By Air Mail*)—Few awards of size were noted this week and demand, generally, is not improving. Prices are holding fairly firm. R. D. Wood & Co. secured the largest award, 598 tons of cast iron pipe for Glendale, Calif. Among the larger new inquiries is 800 tons of structural shapes for car underframes for the Pacific Fruit Express, San Francisco.

Bids were opened on 500 tons of reinforcing bars for a water front project at Stockton, Calif. Bids will be opened April 27 for 250 tons of industrial buildings at the Sunnyvale dirigible base and April 20 for 205 tons for highway work in Sonoma county, Calif. Warehouse prices in the San Francisco district continue unchanged at 2.60c, base, on carload lots. Merchant bar steel holds at 2.00c, c.i.f.

Bids will be opened April 13 for a bridge over the Virgin river, Nev. Standard shapes are firm at 2.00c, c.i.f., while wide flange material is quoted at 2.10c.

Pending cast iron pipe tonnage now exceeds 3000 tons. Bids have been opened on 248 tons for San Diego, Calif.

Steel in Europe

Signs of Improvement in Many Markets—Entente Lapses

London—(*By Radio*)—Middlesbrough pig iron, structural and rail prospects are improving and west coast hematite shows better tone. Dorman, Long & Co. Ltd. has concluded arrangements for building a bridge in New Zealand. Stewarts & Lloyds Ltd., has been awarded 60,000 tons for the Iraq pipe line. Shipments of tin plate are increasing and India is buying galvanized sheets. Advices from Paris note a decree imposing import quotas on semifinished and rolled steel. Brussels reports markets are unsatisfactory. Berlin reports booking of a share in Swedish bridge construction and a tonage for the Iraq pipe line, while locomotive orders from Russia and Turkey have been booked.

The Steel Entente has ceased to exist as member countries failed to renew their agreement as of April 1. No official notice is taken of this omission, as it is hoped pending negotiations may bring about a renewal of the organization in a short time.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, April 7

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON		£ s d		£ s d
Foundry, 2.50-3.00 Silicon	$11.14	2 18 6	$ 9.72 to $10.21	2 0 0 to 2 2 0
Basic bessemer	10.67	2 16 0*	7.78 to 8.26	1 12 0 to 1 14 0
Hematite, Phos. .03-.05	12.19	3 4 0	.....	.....
SEMIFINISHED STEEL				
Billets	$20.48	5 7 6	$10.69	2 4 0
Wire rods, No. 5 gage	32.39	8 10 0	23.09	4 15 0
FINISHED STEEL				
Standard rails	$31.43	8 5 0	28.55	5 17 6
Merchant bars	1.19c	7 0 0	.52c	2 7 0
Structural shapes	1.32c	7 15 0	.51c to .52c	2 6 0 to 2 7 0
Plates, †¼ in. or 5 mm	1.49c	8 15 0	.63c to .64c	2 17 0 to 2 18 0
Sheets, black, 24 gage or 0.5 mm.	1.49c	8 15 0	1.27c to 1.29c	5 15 0 to 5 17 6
Sheets, gal., 24 gage, corr.	1.62c	9 10 0	1.54c	7 0 0
Bands and strips	1.62c	9 10 0	.72c to .74c	3 5 0 to 3 7 6
Plain wire, base	1.45c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.87c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.87c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 3.05	0 16 0	$3.20	0 13 2

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d	French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$11.14	2 18 6	$ 9.48	240(2)	$ 9.55	340	$16.41	69
Basic bessemer pig iron	10.67	2 16 0*	7.90	200(1)	8.71	310	17.95	75.50
Furnace coke	2.52	0 13 3	5.10	129	4.50	160	5.09	21.40
Billets	20.48	5 7 6	14.62	370	11.10	395	23.66	99.50
Standard rails	1.40c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.19c	7 0 0	.90c	500	.60c	460	1.24c	115
Structural shapes	1.49c	8 15 0	.99c	550	.59c	455	1.22c	112.50
Plates, †¼-in. or 5 mm	1.53c	9 0 0	1.17c	650	.73c	565	1.43c	132
Sheets, black	1.49c	8 15 0½	1.35c	750‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	1.62c	9 10 0	2.70c	1,500	1.95c	1,500	4.00c	370
Plain wire	1.45c	8 10 0	1.75c	970	1.95c	1,500	1.92c	178
Bands and strips	1.62c	9 10 0	.90c	500	.88c	675	1.44c	133

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New York

BUFFALO—Lakeside Bronze has been incorporated with $10,000 capital to manufacture brass castings, by J. F. Smith, Buffalo.

ELMIRA—Swift & Co. are having plans made for a wholesale warehouse adjoining the tracks of the Erie railroad at Elmira, construction to start this spring.

NEW YORK—Steinmeier Bronze Tablet Co. has been incorporated with $10,000 capital to operate a foundry, by Aronstein, Shapiro & Solow, 1697 Broadway.

NEW YORK—Halberd Mfg. Co. has been incorporated with 200 shares no par value to manufacture metal furniture, by A. Singer, 333 West Thirty-sixth street.

NEW YORK—L. & O. Metal Stamping Corp. has been incorporated with $10,000 capital to manufacture metal stampings, by G. Reshan, 10 East Fortieth street.

NEW YORK—Lubrication Systems has been incorporated with 200 shares no par value to manufacture mechanical devices, by P. E. Moss, 1775 Broadway.

New Jersey

PATERSON—Coal Ator Stoker Corp. has been incorporated with $150,000 capital to manufacture stokers and similar products, by Samuel L. Biber, 5 Colt street, Paterson.

Pennsylvania

GREENVILLE—Greenville Steel Car Co. is having plans made for rebuilding its burned machine shop and pattern works, on which the loss was $50,000.

WASHINGTON — Washington Tin Plate Co., Woodland avenue, B. F. Brehl, vice president, will build a 1-story machine shop 50 x 100 feet.

Ohio

CLEVELAND—Sabin Machine Co., H. B. Sabin, president, 6538 Carnegie avenue, will build a 1-story addition to its plant at 6601 Cedar avenue, to cost $40,000. H. B. Morse Co., 736 Prospect avenue, is architect and engineer.

MIDDLETOWN—Miami Art Metal Co. has been incorporated with 250 shares no par value by James W. Ash and associates.

Michigan

DETROIT—Fairview Screw Products Co., 1155 East Jefferson street, has been incorporated with $50,000 capital to manufacture screw machine products, by Tracy P. Miller and associates.

DETROIT—Play-Buoy Mfg. Co. has been incorporated with $10,000 capital and 1000 shares no par value to manufacture floats and equipment, by Clarence L. Walk, 743 Beaubein street, Detroit, and associates.

SAULT STE. MARIE—Upper Peninsula Power Co., Edison building, has been incorporated with 30,000 shares no par value, to build and maintain power plants and electric transmission lines by William E. Vogelbach and associates.

Illinois

CICERO—Western Sheet Steel Co., 1550 South Fifty-ninth avenue, has been incorporated with 750 shares no par value to deal in steel and metals, by Rubin & McGuire, 100 North LaSalle street, Chicago.

Oklahoma

OKLAHOMA CITY—Sterling Refining Co. has been organized to take over and operate the plant of the Peerless Oil & Refining Co. here. Plant will be enlarged and cracking stills may be added. B. F. Green, Hunt building, Tulsa, Okla., is vice president and general manager.

TULSA—Texas Pipe & Tool Co. has been incorporated with $10,000 capital to operate a pipe machine shop, by R. E. Sigmon, 734 North Trenton street.

Texas

HOUSTON—Shudde Mfg. Co. has been incorporated with $2000 capital to manufacture metal products, by A. J. Shudde, 4510 Woodside avenue, Houston.

Wisconsin

MILWAUKEE—Sheriffs Wheel Co. has been incorporated with 500 shares no par value to manufacture propeller wheels and castings, by M. J. Jarcho, 105 Wells street.

MILWAUKEE—Mid-West Can Co. has been incorporated to manufacture tin containers and products by Abraham Rickover, 1241 Dewey avenue, Wauwatosa, Wis., M. L. Blumenthal and E. R. Jewasinski, 910 East Wisconsin avenue, Milwaukee.

Dominion of Canada

ST. CATHARINES, ONT.—Engineering, Tools, & Forgings Ltd. has been incorporated with $50,000 capital to manufacture machinery and implements, by Harold C. F. Mockridge, Toronto.

TORONTO, ONT.—Westco Pump & Engineering Ltd. has been incorporated with $10,000 capital to manufacture engines, boilers and pumps, by Claude B. Owen, Toronto.

TORONTO, ONT.—Landers, Frary & Clark Ltd. has been incorporated with $5000 capital to manufacture electrical devices, by Harry L. Wright, Toronto.

TORONTO, ONT.—A. B. Dick Co., Chicago, manufacturer of duplicating machines and similar products, has taken a plant at 179 John street and will equip it for manufacturing its products through a subsidiary, the Mimeograph Co. Ltd., which has been incorporated with $50,000 capital.

HULL, QUE.—Zenitherm Co. of Canada Ltd. has been incorporated with $75,000 capital and 25,000 shares no par value to manufacture machinery, by Sydney Louis Dion, Ottawa, Ont.

MONTREAL, QUE—Joseph Elie Ltd. plans construction of an oil refinery in Montreal East, to cost $1,000,000. Plans are being drawn.

SHERBROOKE, QUE.—Central Quebec Light & Power Co. plans to spend $1,250,000 on a hydroelectric power development on the St. Francis river and erection of a pulpwood grinding plant.

ST. CESAIRE, QUE.—Additions will be made to the waterworks plant here, including installation of a centrifugal pump. Rosaire Dussault is secretary and treasurer.

New Trade Publications

ROLLER BEARINGS—Shafer Bearing Corp., 621 South Kolmar avenue, Chicago, has prepared bulletin No. 501, which lists all its sizes of bearings, single and double row, with dimensions, list prices and a speed factor table for figuring intermittent speeds.

WELDING—Plate 33 of its series of studies in structural arc welding has been issued by Lincoln Electric Co., Cleveland. It is oncerned with angle bracing of mill buildings. Diagrams illustrate the text.

CORROSION-RESISTING STEEL ALLOY—Associated Alloy Steel Co. Inc., Cleveland, in a current bulletin describes its new alloy steel containing chromium, copper, silicon and iron, producing a corrosion-resistant metal adapted to many uses. Various phases of its applications are discussed and illustrations show its appearance in use.

TESTING MACHINE — Baldwin-Southwark Corp., Southwark division, Philadelphia, in Bulletin No. 28 presents a short textbook on hydraulic testing machines, written about the Southwark-Emery testing machine. The history of this type of machine is given as an introduction and the various features of its construction then are described. Illustrations present various types of machines and of indicating and recording devices for use with them.